



OSPREY AIRCRAFT OF THE ACES® • 60



Israeli F-4 Phantom II Aces

Shlomo Aloni



SHLOMO ALONI is a prolific and well-respected aviation historian based in Israel. A regular contributor to aviation magazines in the UK, this is his third volume for Osprey.

JIM LAURIER is a native of New England, growing up in New Hampshire and Massachusetts. He has been drawing since he could hold a pencil, and throughout his life he has worked in many mediums, creating artwork on a variety of subjects. Jim prefers to paint with oils on linen or canvas, with realism being the goal. He combines his love of history with his flying experiences to create some of the most realistic and historically accurate aviation paintings seen today. Indeed, technical accuracy and attention to detail have become the trademarks of his work. He uses a computer to digitally create many illustrations of aircraft and armoured fighting vehicles, bringing the same level of detail to his digital creations that has earned him a reputation as a fine artist.

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**Israeli
F-4 Phantom II
Aces**

SECOND EDITION JOHN HUGHES
GREATEST AIRCRAFT OF THE WEST • 40

Israeli F-4 Phantom II Aces

William H. Hester



Front cover

At noon on 30 July 1970 four IDF/AF four-ship fighter formations ambushed Soviet MiG-21s operating over Egypt. The bait was provided by four Mirage IIIs imitating the flight profile of a high-altitude reconnaissance mission. Two four-ship combat air patrols lurking at low altitude below the coverage of Egyptian radar represented the main force to spring the trap, while a fourth formation of four was on immediate readiness at Refidim air base in Sinai. Each formation of proven MiG killers came from a different squadron, for this was no ordinary mission. The objective was to shoot down as many MiGs as possible, which is why only the best pilots were selected to participate in what was considered a team effort. Indeed, many of the pilots flying as wingmen were leaders in the own units, as well as being MiG killers.

The contribution of the IDF/AF F-4E Kurnass (Hebrew for Sledgehammer) force to this effort was a No 69 Sqn four-ship formation led by unit CO, Avihu Ben-Nun, and his navigator Shaul Levi. On his wing flew Aviem Sella and navigator Reuven Reshef. Both pilots were already MiG killers, although their navigators were not. Ben-Nun had been credited with two victories flying a Mirage III while Sella had claimed the second Kurnass kill on 8 February 1970. Now they were flying as one of the mission's two main CAPs.

The ruse worked well. Expecting to engage two unarmed reconnaissance Mirage IIIs flying straight and level at high altitude, the Soviet MiG-21 pilots actually met four fully armed delta fighters. The hunters became the hunted, and soon the first MiG-21 went down. Its pilot ejected, and instead of free-falling from high altitude and then opening his parachute, the Russian's canopy unfurled just seconds after he had left his fighter. Descending slowly earthwards as the engagement was played out around him, the MiG-21 pilot acted as a 'beacon' for the Israelis. Whenever a pilot had to indicate his position during the combat, he would report, 'five miles south of the parachutist'.

It is generally accepted that four four-ship Soviet MiG-21 formations

This book is dedicated to Nili, Tal, Yael and Maya

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were scrambled to engage the Israeli 'reconnaissance' mission, and that they approached the air combat sector after the remaining main force CAPs were vectored to engage. One of the Mirage IIIs suffered a technical malfunction and had to abort the mission, the leader escorting him to Refidim, from where the readiness pilots were scrambled as a substitute.

In the ensuing air combat Ben-Nun and Sella each shot down a MiG-21, the former, in Kurnass 105, chasing a MiG-21 which was flying west towards the Nile Valley at low

altitude. First they launched an AIM-9 Sidewinder, which failed to even slow the MiG down despite exploding near to the target. Levi then achieved a radar lock on the MiG and Ben-Nun launched an AIM-7 Sparrow, which shot the jet down. The pilot did not eject. When Ben-Nun and Sella regrouped, Sella noticed the two missing AAMs and asked Ben-Nun which missile type he had used to down the MiG-21. At that time the Sella's family pet was a dog was called 'Sparrow', so Ben-Nun replied, 'With your dog'! (Cover artwork by Mark Postlethwaite)

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ATTRITION

An 'ace' pilot is usually considered to be a fighter pilot. Indeed, the dictum 'not a pound for air-to-ground' is attributed to the US Air Force's 'fighter mafia', who despised the concept of the fighter-bomber. Although it is only natural for fighter pilots to yearn for the best available aircraft for air-to-air combat, senior commanders usually have a broader view of what is best-suited to their needs. As the air force of a small nation with limited resources, the Israeli Defence Force/Air Force (IDF/AF) firmly believed that versatile combat aircraft that were both able to attack the enemy and have a reasonable self-defence capability made the best use of limited resources.

Yet versatile fighters had inherent deficiencies. Dassault's Mirage III, which formed the backbone of the IDF/AF during the 1960s, had earned its fame as a MiG killer, but its bomb-carrying ability in the ground attack role was not satisfactory and nor was its all-weather performance.

The IDF/AF's mixed force of ground attack aircraft in the 1960s proved able to defend themselves against hostile interceptors, and were credited with air-to-air kills. However, if 'versatility' was defined as the ability to fly both air-to-air and air-to-ground missions with equal success, then the Dassault's Ouragan, Mystere, and Super Mystere, Sud Aviation's

McDonnell Douglas released this image of an 'Israeli' F-4E on 11 November 1968, midway between President Lyndon B Johnson's January 1969 commitment to supply the Phantom II to Israel and the actual start of deliveries in September of that year. They subsequently arrived at the rate of four a month



A McDonnell Douglas artist's impression of an F-4D look-alike in Israeli camouflage. Israel's purchase of the aircraft was agreed in January 1968, officially announced by the State Department on 28 December and covered by Project Peace Echo (later Peace Echo II), which included 44 F-4E fighter-bombers and six RF-4E reconnaissance aircraft – the latter did not arrive in Israel until January 1971

Ten IDF/AF aircrews attended the 4452nd TFTS's F-4 conversion course at George AFB, California, in March 1969. Seen here, standing, from left to right, are Ehud Henkin, Shaul Levi, Yair David, Rami Harpaz, Shmuel Hetz, Achikar Eyal, Aviuh Ben-num, Menachem Eini, Yitzak Peer and Yoram Agmon. Henkin, Hetz and Levi would be killed in action while flying the aircraft, and four of these men had become PoWs within 12 months of this photograph being taken. The personnel in the front row are all USAF instructors



The IDF/AF's first four F-4Es (USAF serials' 68-0396 to 68-0399) arrived at Hatzor on 5 September 1969 to become Kurnass 01, 04, 08 and 10, respectively. All made history in a way, for 01 flew the first Kurnass operational mission on 22 October 1969, 04 became the first F-4 loss, 08 was credited with the type's first kill and 10 scored the third

Vautour and the McDonnell Douglas A-4 Skyhawk hardly qualified. As for the Mirage III, the surviving examples of the delta-winged fighter were so precious as to be rarely committed to air-to-ground missions after the Six Day War of June 1967. It was not until September 1969 that the IDF/AF introduced its first truly multi-role fighter when the F-4E Phantom II entered service with No 201 Sqn.

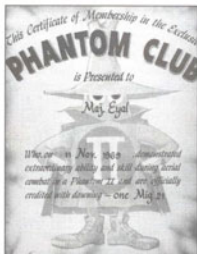
ARRIVAL OF THE SLEDGEHAMMER

Just 67 days after the first four F-4E multi-role combat aircraft arrived in Israel, on 5 September 1969, during the undeclared War of Attrition between Egypt and Israel, an IDF/AF Phantom II was credited with an air-to-air kill. This was not an IDF/AF record, however, for in 1948 the Avia S-199 reached the same milestone in less than a fortnight. But it was, and still is, an IDF/AF 'jet age' record.

Among Israeli fighters, the F-4 is ranked second only to the Dassault Mirage III and Israeli Aircraft Industries (IAI) Nesher family of deltas for the number of air-to-air kills it has achieved. Yet it must be stressed that most of the operational sorties flown by IDF/AF delta-fighters were pure air-to-air missions, while the versatile F-4 usually earned its living attacking ground targets, rather than chasing hostile fighters across the sky. Therefore, the achievement of IDF/AF Phantom II aircrews, officially credited with 116.5 aerial kills between September 1969 and June 1982, is all the more outstanding.

Known to the IDF/AF as the Kurnass (Sledgehammer), the F-4E revolutionised Israeli perceptions of aerial combat when it entered service with No 201 Sqn at Hatzor. The Kurnass was a true multi-role combat aircraft, and for the first time in IDF/AF history, the key fighter in the inventory was a two-seater. Although functioning much like their USAF Weapon-System Operator (WSO) counterparts, Israeli back seat crewmen were still termed navigators. Many had to be trained within a short timescale, as before the arrival of





The 11 November 1969 kill also earned Achikar Eyal a Phantom Club certificate of membership!

Aviem Sella and navigator Shabtai Ben-Shoa were credited with the first No 69 Sqn kill while flying Kurnass 126 on 8 February 1970. In this photograph, taken the following October, the kill marking has been inexplicably covered over with a paper patch



general direction with Henkin to my left. Still nothing on the radar screens, so intuitively I turned right and there they were, two MiG-21s. I followed one, squeezed the trigger but nothing happened. I squeezed and squeezed and still nothing, so I moved aside. Henkin launched (an AIM-9B AAM) and shot the MiG-21 down.

'Only on our way back did I notice that Henkin was flying Kurnass 08, which had already been locally modified to launch AAMs through the activation of the cannon trigger on the stick. Until that moment I was sure that I'd been flying 08!'

The first IDF/AF Kurnass conversion course was attended by twelve pilots and seven navigators, although five of the pilots were senior commanders – Ya'acov Agassi (Ramat David air base CO), Ya'acov Nevo (Hatzor CO), Ohad Shadmi (Head of Air 3, Operations Branch or the Third Air Department branch), Aharon Yoeli (Head of Air 5, Training Group or the Fifth Air Department branch) and Levi Zur (Hatzor air base CO Flying) – who would only fly the Kurnass as emergency posting (EP) assignments. The first Israeli ace, Giora Rom, was not a part of the course, as he had been shot down over Egypt on 11 September 1969 while flying a Mirage III. Now a PoW, he was replaced by Yigal Shochat.

A short-term remedy to the obvious shortage of back-seaters resulted in three veteran Mosquito navigators – Yigal Bar-Shalom, Oded Erez and Uri Talmor – attending the second Kurnass conversion course.

As soon as enough aircraft and aircrews became available, No 69 Sqn was activated on 23 October 1969, and one of the unit's crews was to be credited with the IDF/AF's second Kurnass kill, on 8 February 1970. By this time the F-4 community was flying a strategic campaign known as Operation *Pricha* (Blossom). *Pricha 1* was launched on 7 January 1970, and with Kurnass fighter-bombers hitting

strategic military objectives deep in Egyptian territory, Israel hoped that Egypt would be forced to accept the full extent of Israeli military superiority. As it turned out, *Pricha* actually triggered a further escalation in the War of Attrition, forcing Egyptian president Gamal Abdel El-Nasser to seek direct Soviet involvement in the regional conflict.

An Egyptian commando HQ at Inshas and military depots at Helwan were targeted in *Pricha* 8 on 8 February 1970, with No 69 Sqn bombing the former and No 201 Sqn the latter. Kurnass escorts defended the F-4 bombers, while Mirage IIIs flew CAPs. The strike provoked Egyptian MiG-21s to intercept the No 69 Sqn bombers, and in the ensuing combat Aviem Sella and his navigator Shabtai Ben-Shoa shot down a MiG-21. Sella launched three AAMs which missed before he closed the range and opened fire with his six barrel 20 mm M61 Vulcan cannon. The first burst missed, but the second, from 450 m, found its mark. The result was four 'firsts' – the first Kurnass cannon kill, the first No 69 Sqn kill and the first kill for Sella and Ben-Shoa.

AMBUSH!

The arrival of the F-4 allowed the IDF/AF to introduce innovative new mixed formation tactics which fully exploited Kurnass and Mirage III capabilities in 'planned' air combats. Israeli air combat superiority resulted in the Egyptian Air Force (EAF) avoiding engagements with IDF/AF fighters, except on favourable terms. These included intercepting inferior IDF/AF attack aircraft or bombers deep inside Egypt, or engaging Israeli aircraft far from home and low on fuel.

To draw Egyptian fighter pilots into combat, the Israelis had to prepare special ambushes. This in turn meant evolving levels of complexity and ingenuity to maintain deception in the face of Egyptian counter-tactics. With a mixed four-ship formation of two F-4s leading and a pair of Mirage IIIs trailing, the two-seat fighter-bombers, with their powerful radar system and two-man crew, acted as the Mirage III pilots' eyes, but only after visual contact was made.

Mixed formations improved Mirage III pilots' situational awareness and also offered Kurnass aircrews the opportunity to shot down MiGs. No 201 Sqn's Yitzhak Peer fully exploited just such a situation on 6 March 1970 while leading a mixed formation CAP that was protecting a reconnaissance mission. When the formation was vectored to engage intercepting EAF MiG-21s, Peer launched



This December 1972 photograph of No 69 Sqn junior deputy CO Aviem Sella (right) shows him being greeted by squadron CO Amnon Arad (left) and Ramat David base CO Arlozor 'Zorik' Lev (back to camera) upon his return from a night mission. Sella graduated from the IDF/AF fighter school's class 46 in March 1965, together with future MiG killers Giora Epstein (17 kills), Avi Gilad (five), Menachem Shmul (five), Avshalom Rom (three) and Adi Benaya (one). He flew the *Mystere* during the 1967 Six Day War and converted to the Kurnass in 1969. Between 1976 and 1979, Sella was No 201 Sqn CO, while as Head of the Operations Department, he was in charge of the planning and execution of the SEAD effort during the June 1982 Lebanon War.

This photograph of Kurnass 610 was taken before the application of the kill marking following its 6 March 1970 victory. Note that the thin red fuselage band remains 'broken' where it was overpainted with the spraying out of the USAF marking. A fresh patch of paint on the tail also marks where the jet's USAF serial has been oversprayed.





Although still lacking a complete red fuselage warning stripe, and with an oversprayed serial on its tail, Kurnass 610 now at least features an EAF roundel beneath its cockpit to denote Yitzak Peer destruction of a MiG-21 on 6 March 1970. Yoram Agmon and navigator Menachem Eini flew this aircraft on 11 November 1969 when Agmon came close to achieving the first Kurnass kill to follow up his feats with the Mirage III three years earlier

No 201 Sqn CO Shmuel Hetz was credited with his first kill on 25 April 1970. Here, he briefs defence minister Moshe Dayan on 23 June 1970. Pictured, left to right, are Ya'acov 'Yak' Nevo (Hatzor base CO 1967-70), Chaim Bar-Lev (IDF Chief of Staff 1968-72), Dayan (defence minister 1967-1974), Rafael 'Rafi' Harlev (Hatzor CO from 30 June 1970), Hetz and Morechal 'Moti' Hod (IDF/AF CO 1966-73). Hetz was killed less than a month after this picture was taken when his Kurnass was shot down during a SEAD mission



two AIM-7 AAMs, both of which missed. The two Mirage IIIs then shot down a MiG-21 and disengaged, leaving the two Kurnass to fight the remaining seven MiG-21s. Egyptian GCI opted for numbers to balance the IDF/AF's qualitative superiority, but in this case the tactic backfired for Peer claimed a MiG-21 kill, firing his cannon from 250 m.

The combination of the Kurnass' radar, weapon system and the AIM-7 semi-active radar homing AAM shifted the priority of IDF/AF night quick reaction alert missions, and the Kurnass soon supplanted the Mirage III as the preferred nocturnal interceptor.

It was during the transfer of responsibility that the Kurnass was credited with its first night air-to-air kill. On 25 April 1970, EAF Il-28s were intercepted whilst bombing IDF targets in Sinai by three No 201 Sqn crews that had been successively scrambled from Hatzor, together with a single Mirage III from Refidim. Two Il-28s were downed, one being credited to the Mirage III pilot and the other to No 201 Sqn's Shmuel Hetz and Menachem Eini (navigator).

Within seven months of its introduction into service, all three of the air-to-air weapon systems used by the Kurnass had been proved in combat – the cannon, the AIM-7 and the AIM-9. The four kills scored so far had been achieved in a variety of scenarios – CAP, escort and night interception – and by both squadrons. The Kurnass' impressive air-to-air kill-to-loss ratio took a hit on 2 April 1970, however, when a No 69 Sqn F-4 was shot down by a Syrian Air Force (SAF) MiG-21. Dropping to 4-to-1, the ratio would improve to 7-to-1 by the end of the War of Attrition.

The Kurnass' dominant air-to-air weapon in the form of the AIM-9D AAM made its combat debut on 25 June 1970. Occasional skirmishes along the Syrian border often resulted in both sides using

air power, and although the Mirage III was the IDF/AF's main fighter, Kurnass aircrews were also tasked to fly CAPs. At noon that day Yoram Agmon, with Eitan Peled as his wingman, visually acquired four Syrian MiG-21s. With IDF/AF Mirage IIIs in the area, GCI was afraid of a 'friendly fire' incident, but Agmon's identification was correct. However, the AIM-7 that he launched missed. Peled fired a second missile from head-on, but it too missed. He then completed a 180-degree turn and switched to

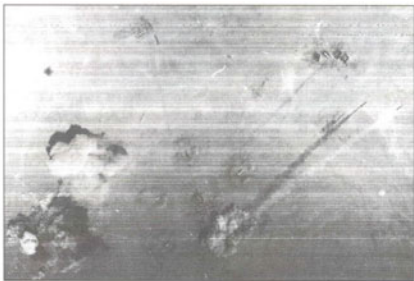
the infra-red AAM option, as he reported afterwards;

'The MiG, which was diving, suddenly pitched its nose up and launched an AAM at a Mirage III. At that moment the range was 1.4 miles, and I launched an AIM-9D. The missile's rocket flamed out after about 1500 m but the missile continued to home on to the MiG and hit its tail section. The MiG lost control, yawed and spun in. There was no fireball, although the MiG exploded on hitting the ground. The pilot ejected.'

Despite this success, times were generally tough for the Kurnass community, with four F-4s being lost on suppression of enemy air defences (SEAD) missions between 30 June and 18 July 1970. A badly-needed boost for morale came on 30 July when the IDF/AF set up a well-planned ambush of Soviet aircraft.

With the balance in the struggle for air superiority tilting towards the Soviet-backed Egyptian air defence force (ADF), Soviet MiG pilots became much more aggressive, perhaps envying the success of their ground-based colleagues. Operation *Pricha* was discontinued after *Pricha 21*, on 13 April, following an attempted Soviet interception of two No 69 Sqn F-4s on a reconnaissance mission deep into Egypt. The Israeli leadership hoped that if the IDF/AF stopped flying over areas defended by the Soviets, a direct confrontation would be avoided. This worked for several weeks until it became apparent that the Soviets were expanding their ADF sectors in an effort to seek an engagement. A close call followed on 25 July, when a Soviet MiG-21 damaged an A-4. The Israelis now decided to confront the Soviets head-on.

A classic team ambush was organised for noon on 30 July. The bait was four Mirage IIIs flying a high altitude reconnaissance pattern over a



On 4 July 1970 the bombing camera in the No 201 Sqn aircraft of future Kurnass ace Ben-Ami Peri, with ex-Mosquito navigator Yigal Bar-Shalom in the back seat, captured this extraordinary view of what was a fairly common scene at the time. At the extreme right of the photograph, an Egyptian SA-2 missile heads off towards Peri's leader, Yoram Agmon, flying with navigator Menachem Eini. Fighting the Egyptian ADF cost the Kurnass force five aircraft to SAMs between 30 June and 3 August 1970

No 69 Sqn Kurnass 183 was the highlight of the press day at Ramat David air base in June 1970, which was held one month prior to the jet scoring its first kill when Aviem Sella and Reuven Reshef downed a Soviet MiG-21 with an AIM-9D



known Soviet sector of operations south-west of Suez City. Not only were the supposedly unarmed 'recce' Mirage IIIs fully armed and ready to face the Soviet interceptors, the usual CAPs defending them were also far from normal in their make up. The pilots flying the four 'bait' jets, plus the four on CAP and those on quick reaction alert (QRA) at Refidim, as well as the pilots of the No 69 Sqn four-ship CAP, were all proven MiG killers.

As the Soviets scrambled their MiG-21s, the hunters became the hunted. Asher Snir opened the scoring with his 12th, and last, kill as a Mirage III pilot. Five Soviet MiG-21s were shot down in total, including two by Kurnass aircrews. Avihu Ben-Nun and Shaul Levi downed a MiG-21 with an extraordinary low altitude AIM-7 shot, while Aviem Sella and Reuven Reshef chased their MiG from 15,000 ft down to 2000 ft, where it was destroyed by an AIM-9D.

Eight days later the 17-month static war between Egypt and Israel ended in a UN-brokered cease-fire agreement that became effective on 7 August 1970. For the US government, direct confrontation in a regional conflict between a local ally and the USSR was considered too risky. Both Egypt and Israel were able to claim military achievements to excuse a cease-fire. Israel had frustrated any Egyptian attempt to cross the Suez Canal into Israeli-held Sinai and the IDF/AF had shot down five Soviet fighters. By the end of the war, and with massive Soviet support, Egypt had finally started to win the air superiority battle, robbing the IDF/AF of the freedom of operation it had enjoyed since its overwhelming victory in the Six Day War.

The introduction of the Kurnass to IDF/AF service during the War of Attrition had been remarkably smooth under the circumstances. By the end of the conflict the two F-4 units were combat proven in almost every aspect of aerial warfare. Although the air-to-air kill-to-loss ratio was 7-to-1, the overall Kurnass ratio was 7-to-7, as six fighter-bombers had been lost to Egyptian AAA and SAMs (and one to an SAF MiG-21). An eighth was destroyed in an accident in March 1970.



The kill marking displayed on No 69 Sqn's Kurnass 183 denotes the Soviet MiG-21 shot down by Aviem Sella and navigator Reuven Reshef on 30 July 1970

No 69 Sqn CO Avihu Ben-Nun (left) briefs IDF Chief of Staff (CoS) Chaim Bar-Lev (centre) and defence minister Moshe Dayan, with IDF/AF CO Moti Hod just visible at the extreme right. Ben-Nun graduated from IDF/AF fighter school class 29 in November 1959 and commanded No 69 Sqn from October 1969 through to April 1971, during which time he added a single kill to the two he had scored as a Mirage III pilot in 1967. Flying as an emergency posting (EP) officer during his subsequent staff assignments (Operations Branch Head of Attack Planning Section and, from 1975, Head of Operations Department), Ben-Nun added a fourth victory in September 1972. His last combat sorties (eight in total) were flown during the Yom Kippur War. After commanding bases at Hatzor (1977-79) and Tel Nof (1979-82), Ben-Nun returned to the IDF/AF Staff as Head of Air Group (1982-83) and IDF/AF CoS (1983-84), before joining GHQ as Chief of Planning Branch from 6 June 1985 until 24 July 1987. He then became IDF/AF CO from 22 September 1987 through to 2 January 1992



DOUBLE FORCE, TREBLE KILLS

The end of the War of Attrition on 7 August 1970 enabled the IDF/AF to expand its Kurnass force, and No 119 Sqn formally became the third unit to operate the type at Tel Nof on 29 October. New tactics and weapons were introduced to counter the Egyptian air defence challenge, including the AGM-45 Shrike anti-radiation missile (ARM) and the Mk 20 Rockeye II cluster bomb unit (CBU). Additional crews were also trained to fly the Kurnass, as during the first year of operations the burden of missions had been shared among a limited number of men. In that time eight F-4s had been lost – five to SAMs and one each to AAA, a Syrian MiG-21 and an accident – and of the 16 aircrew involved, four were killed, nine became PoWs and three were rescued. Of the ten converted onto the Kurnass in the US, no fewer than eight were involved in the initial losses – David, Henkin and Levi were rescued, Eini, Eyal, Harpaz and Peer became PoWs and Hetz was killed.

AIR COMBAT SKILLS

Dissimilar air combat training (DACT) honed the air combat skills of both Kurnass aircrews and Mirage III pilots. The F-4 was larger and less agile than the French interceptor, but its brute power, superior radar, advanced weapon systems and extra pair of eyes offered by a well-trained navigator more than compensated for its deficiencies.

No 119 Sqn converted from the Mirage III to the Kurnass shortly after the end of the War of Attrition, as IDF/AF planners had sought to avoid radical changes to the air order of battle during the fighting. After the first two Kurnass squadrons were formed from scratch, the conversion of another Mirage III unit shifted the balance in frontline Mach 2 fighters to two of Mirage IIIs and three operating the F-4E. No 119 Sqn's operational debut with the type came on 29 October 1970. Additional F-4E deliveries, and the service introduction of the IAI Neshar (the locally-produced version of the Mirage 5) ensured further expansion for the IDF/AF. By October 1973 the frontline force consisted of four delta-fighter and four Kurnass squadrons



Sessions against the Mirage III were hot and tough, with neither willing to give quarter. Kurnass aircrews initially had the upper hand, but gradually the Mirage III pilots were able to introduce new tactics against the big fighter-bombers, with a special emphasis placed on preserving energy to off-set the power deficiency.

Although DACT results no longer favoured the Kurnass community, the rules excluded what pilots and navigators considered their major advantage – the aircraft's superior combat endurance. Once a participant reached 'bingo' fuel, the session was terminated. Although essential to ensure acceptable safety levels in training, such an approach nullified the main combat advantage of the Kurnass. With up to four infra red and four semi-active radar-homing missiles compared with the Mirage III's two infra red AAMs, the Kurnass was a superior missile platform. But it was somewhat lacking as a cannon-armed fighter, having up to 630 usable 20 mm rounds yielding just six seconds of fire compared with the Mirage III's 125 rounds per gun, giving ten seconds of harder-hitting 30 mm fire. Overall, the superior air-to-air weaponry, coupled with excellent endurance, resulted in appreciably better results, although this was not fully appreciated in DACT sessions.

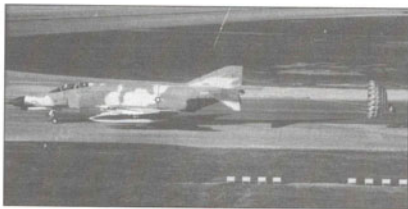
To enhance manoeuvrability, No 69 Sqn Kurnass 187 (USAF 68-0544) was fitted with fixed leading edge wing slats in October 1970. Sustained turn performances were considerably improved, as was the angle-of-attack envelope, but at the cost of additional drag. Operational gains, however, out-weighed drag and load penalties, so the next batches of Kurnass fighter-bombers had leading-edge slats. By then Nos 69 and 119 Sqn aircraft were prefixed 1, while 201 Sqn retained the prefix 6 until after the Yom Kippur War in October 1973.

Delivery of *Peace Echo IV* aircraft (including F-4E Block 51 aircraft delivered with slats) allowed the IDF/AF to further expand the Kurnass force with the formation of No 107 Sqn at Hatzirim in December 1971. To bring non-slatted aircraft to similar configuration, a modification programme was contracted to IAI and work continued



In an attempt to improve the manoeuvrability of the F-4E, No 69 Sqn's Kurnass 187 (ex-USAF 68-0544) was fitted with fixed leading-edge wing slats in October 1970 as a trial installation. They were found to improve the jet's agility, but also slightly reduced the F-4's speed in level flight. Kurnass 187's sharkmouth remained a unique feature of this particular aircraft until it was repainted by IAI after the Yom Kippur War

Peace Echo projects covered planned F-4E deliveries to Israel, plus two emergency supply programmes. Initially, 44 F-4E Blocks (38 to 41) were supplied under *Peace Echo I*, but then deliveries became a low profile issue as a result of the sensitive US-Soviet relationship during the undeclared War of Attrition. *Peace Echo II* covered the supply of six F-4E Block 42s in July-August 1970 which were bought to replace losses, while *Peace Echo III* included 18 F-4E Block 43s delivered from September 1970. The out of line *Peace Patch* project covered 12 F-4E Block 44s, while the F-4E Block 48 example illustrated here (USAF 71-0225) was the second of 42 *Peace Echo IV* F-4E Blocks 48 to 51 jets supplied to Israel. This brought pre-Yom Kippur War F-4E total deliveries to 122 aircraft, of which at least 12 were lost before October 1973. The remaining aircraft were operated by the four Kurnass squadrons



until the late 1970s. Yet another significant modification which was gradually introduced was an in-flight refuelling (IFR) probe. Tests started in December 1971, and the Kurnass fleet was gradually modified to incorporate the new innovation which further improved combat capability.

Cooperation with the Mirage IIIs yielded two Kurnass kills on 13 February 1972. A mixed formation of two No 201 Sqn aircraft and two No 101 Sqn Mirage IIIs escorted a pair of No 119 Sqn RF-4Es on a reconnaissance mission to Mansura, in Egypt. Reconnaissance during 'peacetime' was a top priority, and missions were highly classified because any international exposure of Israeli spying over the territory of its Arab neighbours was definitely not desirable. An operation was considered successful when the reconnaissance aircraft and its escorts penetrated, photographed, returned safely and made no contact with hostile interceptors or air defence forces. Although fighter pilots' personal ambition might have been to engage the MiGs, the strict guidelines for these missions involved avoiding combat whenever possible. As long as it was, the rest of the world remained in the dark.

The February 1972 mission was to prove the exception, not the rule. Mansura was home to the EAF's elite MiG-21 interception brigade, and reaching it meant deep penetration into the Nile Delta where there was a dense concentration of Egyptian bases. In this case entry followed textbook procedure, but departure proved quite a challenge, with the RF-4Es speeding back home over the Mediterranean and the four escorts trailing behind them. Most of the scrambled MiG-21s failed to intercept, but one four-ship formation managed to achieve a perfect solution. Within minutes the EAF fighters were in the escorts' 'six o'clock' position and closing.

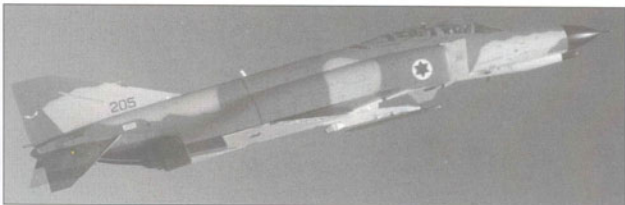
With the RF-4Es safely up front, closely followed by the two F-4Es, it was the fate of the two trailing Mirage III pilots that was actually at stake. A war of nerves ensued as the MiG-21s slowly closed the distance. Would they run out of fuel? Would the IDF/AF escorts be ordered to engage? Would the MiG-21s open fire first?

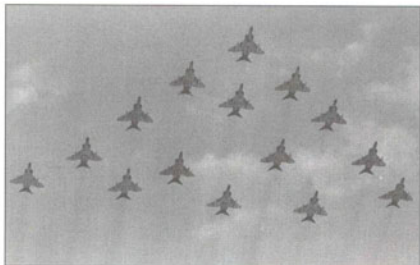
At a range of 1.5 miles, the Mirage III section leader, Israel Baharav, could wait no longer. Without orders, he broke hard and turned to face the MiG-21s. This left the Kurnass pair with no option but to join the Mirage IIIs. In the ensuing combat both Kurnass crews were credited with a single kill apiece. Adi Benaya was flying No 673, with Yosef Lev-Ari as his navigator. Benaya later reported;



Celebration – a No 201 Sqn groundcrewman poses in front of the right-hand AAM pylon of Kurnass 633, minus the AIM-9D round normally carried there. This photograph was taken on 13 June 1972, Eitan Peled having just landed in this machine after scoring his second kill, and navigator Yoram Romem's first

Project *Peace Echo IV* enabled the IDF/AF to expand its Kurnass force with the formation, in December 1971, of No 107 Sqn. Commanded by Yiftach Spector, the unit adorned its jets with high-visibility orange rudders. They were the first IDF/AF Kurnass aircraft to be delivered with leading-edge wing slats, although earlier examples were progressively retrofitted by IAI in a project completed in 1978. *Peace Echo IV* F-4E Blocks 50 and 51 aircraft were the first to be prefixed 2, Shlomo Egozy and Yoni Arel being credited with a MiG-21 kill on 12 October 1973 while flying this particular jet (Kurnass 205)





A formation flypast of F-4s marked IDF/AF Day on 18 July 1972. In pre-Yom Kippur War times, such displays were a feature of Israeli Independence Day and IDF/AF Day. This photo also highlights two of the type's major deficiencies as an air-to-air fighter – sheer size, and the tell-tale black smoke trail emitted by its General Electric J79 turbojets

Right

Five frames from the gunsight film of Gurion and Golan's aircraft on 21 November 1972. The MiG-21 was definitely hit, the kill being verified by a Mirage III pilot

Avihu Ben-Nun, with navigator Zvi Edan (Kesler), shot down a Syrian Su-7 in Kurnass 183 on 9 September 1972. It was to be the first of only five Su-7 kills credited to Kurnass aircrews, and the second victory scored in 183



'I entered combat with two of the MiG-21s at a distinct dis-advantage. Israel (Baharav) joined us, and I seized the opportunity to accelerate and to build up my energy state while he launched two AIM-9D AAMs. Both missed, and as he disengaged I returned. The MiG had just completed its break to avoid Israel's AAMs when I launched an AIM-9D that hit the MiG.'

Immediately afterwards, Eitan Peled, with navigator Yoram Romem, shot down a second

MiG-21 again with an AIM-9D. Peled recalled:

'We were escorting a high-altitude RF-4E recon mission when we engaged MiG-21s over the Mediterranean north of Port Said. I turned towards the MiGs and launched an AIM-9D at a very difficult angle, almost 90 degrees off-boresight. Range was 1300 or 1400 m – almost the minimum for such a case, on the boundary of the AAM's launch envelope. The AAM was launched and it hit the MiG-21.'

SYRIAN SCORE

Compared with the air order of battle (AoB) at the end of the War of Attrition, the IDF/AF's Kurnass force had doubled in size by the summer of 1972. Its crews had also boosted their victory tally to nine kills – five Egyptian MiG-21s, two Soviet MiG-21s, an Egyptian Il-28 and a Syrian MiG-21. The kill-to-loss ratio had improved to 9-to-1, and between September 1972 and January 1973 it was to be further increased to 17-to-1. The additional eight kills were all Syrian aircraft.

Deterioration along the Israeli-Syrian border was directly attributed to the massacre of 11 Israeli sportsmen by Palestinian terrorists at the Munich Olympic Games on 5 September 1972. Israel accused Lebanon and Syria of hosting and sponsoring the terrorists. Massive air

strikes on Palestinian targets in Lebanon and Syria on 8 September were followed by retaliatory Syrian air strikes on IDF installations in the Golan Heights the next day.

Opposing these strikes, Avihu Ben-Nun, who had just completed his tour as No 69 Sqn CO in April 1972 and who was flying as an EP with navigator Zvi Edan, downed an SAF Su-7 over the Golan Heights, west of Damascus.

Tension along the border continued. On 21 November 1972 artillery duels and mutual air strikes were followed by air-to-air



combat. The resulting six kills were shared equally between Kurnass aircrews and Mirage III pilots. A No 201 Sqn four-ship formation on an afternoon CAP was vectored to engage Syrian MiG-21s, but it had a hard time telling friend from foe as Israeli Mirage IIIs were also involved. The leading Kurnass pair was unsuccessful, but the No 3 jet, crewed by Amnon Gurion and navigator Baruch Golan, chased down a MiG-21. The MiG was hit by several bursts of cannon fire, although it continued to fly. Gurion then launched an AIM-9D but had to turn away as the air was now full of MiGs, and chasing a single one for too long was a risky tactic. Just as Gurion turned he noticed his wingman, Itzhamar Barnea and navigator Yitzhak Baram, chasing a doomed MiG-21 which had already been hit by an AIM-9D.

The Mirage III pilots' participation in this mission came to be regarded as a blessing, as No 101 Sqn's Yoram Geva confirmed the kills scored by Gurion and Golan. Gurion wrote in his logbook:

'Scramble for a CAP over the Syrian border at 8000 lbs fuel state. Vectored to engage in a multi-bogey engagement – 16 MiG-21s versus our four-ship formation (a mix of Kurnass and Mirage IIIs) and a Mirage III four-ship formation. Gunsight film indicates hits only. Exhausted cannon ammunition and launched an AIM-9D.'

Roughly an hour later another engagement resulted in No 119 Sqn's first Kurnass kill. A pair of F-4s on a CAP mission was vectored to join a battle involving Mirage IIIs and Syrian MiG-21s. Aharon Katz was navigator in the leading Kurnass, flown by Shmuel Ben-Rom. He reported:

'At a range of eight miles we visually acquired the MiG-21s, but lost track of them when we turned. Our wingman turned towards the trailing pair of MiG-21s, launched two AIM-9Ds but missed. When we completed the turn we saw a lot of aircraft. We chased one but didn't launch as we had no positive identification. We then followed a MiG that chased (No 117 Sqn Mirage III pilot) Ran Meir. The MiG launched and opened fire but missed, and then turned east and dived. We dived right behind him and at a range of 900 m launched an AIM-9D. The MiG exploded and crashed.'

These clashes on 21 November 1972 had seen the Kurnass community equal the air-to-air score of its Mirage III counterparts, and on 8 January 1973 a significant milestone arrived when the Kurnass out-performed the delta-fighter in air combat with four kills to two. No 119 Sqn was wholly responsible for the achievement when an attack on a Syrian radar station was intercepted by at least four MiG-21s. The escorting Kurnass aircrews turned into the MiGs, and without even jettisoning a single external fuel tank, shot down four MiG-21s. In just two engagements No 119 Sqn had exceeded the total score (four) of No 69 Sqn to date, although No 201 Sqn still led the way with eight victories.

Kurnass No 4 was the first to score on 8 January when Zvi Kanor with navigator Zvi Tal shot down a MiG-21 with an AIM-9D. No 2 then chased two MiG-21s of which one crashed to be listed as a 'no weapon' kill. The second Kurnass aircrew – David Drori with navigator Nathan Peri – immediately turned their attention to the remaining MiG. They promptly shot it down with two AIM-9Ds to

register the first Kurnass double kill, the MiG pilot ejecting from his doomed jet. Then Kurnass No 1, flown by Shmuel Ben-Rom and navigator Mordechai Ilani, repeated the feat, launching two more AIM-9D. The second missile struck home and the Syrian pilot ejected.

— PROVEN WORTH —

The endurance of the Kurnass again proved its worth on 12 February 1973 during a routine reconnaissance and CAP mission. Although the photographic element of the mission was completed without drama, the Kurnass CAP remained on station just in case. Fifteen minutes later GCI ordered a vector to engage over the Gulf of Suez, south of the city. Flying with Eitan Peled as No 4, the first navigator to lock his radar onto a target was Yehoar Gal. He recalled;

'I was the only one to achieve a lock so Eitan Peled reported, "Lock achieved", and we took the lead. We turned left, leading the formation. Often when the radar was not exactly pointed at a target the echo on the radar screen drifted really fast. That's what happened. So just as we were about to catch them, Eitan Peled decided that we had locked on to ground clutter and he reversed the turn to the right. Exactly at that moment Amnon Gurion, who was No 3, saw them.'

Itzhak Amitay, who was flying with Amnon Gurion, remembered;

'We entered close range air combat with a MiG-21. It started over land and drifted east until we fought over the Gulf of Suez. The combat was characterised by low altitude and slow speed – not exactly the way one should fight, but this was caused by the MiG pilot's aggressiveness. We entered a scissors manoeuvre and launched an AIM-9D. It didn't hit but the MiG pilot broke hard to evade and he lost control. The MiG suddenly behaved like a leaf, losing altitude and crashing into the water with a splash. There was no ejection.'

The momentum of air-to-air success continued. On 13 September 1973, Nos 69 and 119 Sqns each sent two RF-4Es on a reconnaissance mission to northern Syria. A major clash soon developed between



Zvi Kanor (right) shot down a Syrian MiG-21 on 8 January 1973 to score his only kill in the Kurnass. In December 1986, Kanor, who was by then Hatzor air base CO, briefs visiting US Senator Edward Kennedy, escorted by IDF/AF CO Hertzal Bodinger (left)

No 107 Sqn Kurnass 184 (ex-71-0234) displays two Syrian (three stars) kill markings after the 13 September 1973 air combat



Israeli and Syrian interceptors, with three IDF/AF four-ship formations flying CAPs along the Syrian and Lebanese coast in an effort to protect the unarmed reconnaissance jets as they departed the target area. Four No 107 Sqn Kurnass flew a low-altitude CAP just off Tartus, awaiting the order to pop-up and either follow the reconnaissance aircraft home or engage hostile interceptors. Similarly, two Mirage four-ship formations formed a further two lines of defence with a CAP off Beirut and another off the Israeli-Lebanese border. Rescue helicopters orbited further south.

Syrian GCI had anticipated the Israeli reconnaissance pattern, and a number of MiG-21s were successfully vectored to the point at which the intruders were expected to cross the coast. An engagement became unavoidable, and No 107 Sqn took the opportunity to register its first kills. Squadron CO Yiftach Spector, already an ace with eight kills from his Mirage III days, with navigator Micha Oren, shot down two MiG-21s, while his senior deputy, Shlomo Egozy, forced the pilot to eject from his jet after riddling it with cannon fire.

With his personal score now elevated to ten (including two half-kills or shared victories achieved while flying the Mirage III), Spector had become the second Israeli double ace. The country's top pilot at that stage was still Asher Snir with 12 kills, scored while flying the Mirage III, although he had been a Kurnass pilot since October 1970.

Both Mirage formations entered the fray and shot down five more MiGs, but one of the Israeli fighters was also lost. Its pilot ejected and the rescue helicopter was vectored north, with additional Kurnass formations scrambled to protect him as he bobbed in the sea off the Syrian coast, a long way from home.

A No 119 Sqn pair was first to arrive on the scene, where they encountered eight SAF MiG-21s spoiling for a fight. A classic head-on engagement followed, with opponents crossing each other and then turning back to begin the battle. The lead Kurnass was flown by Omri Afek and navigator Chaim Katz, and they established themselves behind two MiG-21s and shot one of the jets down with an AIM-9D. While Afek was preparing to attack the second, his wingman asked permission to launch. Afek agreed, and an AIM-7 sped from its launch rail and the MiG-21 vanished in a fireball. Rafael Koren and navigator Shimshon Rozen had claimed their first kill.

A No 69 Sqn four-ship Kurnass formation and two more jets from No 119 Sqn then arrived in the area. They were led by Moshe Melnik who, as a pilot of one of the RF-4Es, had actually started the whole affair earlier in the day. The view that greeted them was of two Syrian pilots hanging from their parachutes, plus many more MiG-21s.

The No 69 Sqn jets were the first to engage the enemy, and Kurnass No 3, flown by Amnon Arad and navigator Shaul Levi, destroyed a MiG-21 with an AIM-9D. By the time the second formation of No 119 Sqn F-4s arrived on the scene, the No 69 Sqn crews were taking it in turns to attack a lone MiG-21. The fighter flew into the gunsight of the leading No 119 Sqn jet, flown by Moshe Melnik and navigator Chaim Barkan, and a well-aimed AIM-9D did the rest.

Losing a dozen MiG-21s in two successive engagements was probably too much for the SAF. No more arrived, so the IDF/AF

Mirage III ace Yiftach Spector was credited with his first two Kurnass kills on 13 September 1973 when flying with navigator Micha Oren





rescue helicopter was able to retrieve not only the Mirage III pilot but also one of the downed Syrians. Once again, the picture that emerged in the aftermath of this mission was one of Kurnass crews out-scoring the Mirage III pilots by seven kills to five.

The total number of Kurnass kills had now risen to 25, while the air-to-air kill-to-loss ratio between November 1969 and September 1973 had also improved to a staggering 25-to-1. The air-to-air missile was the significant element in this success with 20 kills scored, while cannon was used in just three engagements. The remaining two were listed as 'no weapon' victories. The first 25 Kurnass kills were shared by all four units, nine being credited to No 201 Sqn, five to No 69 Sqn, eight to No 119 Sqn and three to No 107 Sqn. But no Israeli Kurnass ace had yet emerged.

The 25 kills had been shared between 18 pilots and 22 navigators, five of whom were already MiG killers from their days as Mirage III pilots – Yiftach Spector (ten kills, eight with the Mirage III and two with the Kurnass), Avihu Ben-Nun (four, split equally between both types), Amnon Arad (3.5 kills, 2.5 in the Mirage III and one in the Kurnass), Ehud Henkin (three kills, two in the Mirage III and one in the Kurnass) and Omri Afek (three kills, two in the Mirage III and one in the Kurnass). Another five pilots were credited with their first two kills while flying the Kurnass – Shmuel Ben-Rom, David Drori, Amnon Gurion, Eitan Peled and Aviem Sella.

Of the 18 pilots credited with kills up to September 1973, only one was already an ace – Yiftach Spector – while Eitan Peled, Shlomo Egozy and Moshe Melnik reached that status within a month during the following Yom Kippur War. None of the navigators with kills between November 1969 and September 1973 were credited with victories before the Kurnass' introduction. Only three of those 22 navigators had two kills – Nathan Peri, Shaul Levi and Micha Oren. Only navigators Itzhak Amitay and Yossi Yavin became aces.



No 119 Sqn's Omri Afek and navigator Chaim Katz shot down a Syrian MiG-21 in Kurnass 144 on 13 September 1973. This was Afek's first kill as an F-4 pilot after scoring two with the Mirage III, and the first of Katz's eventual tally of 4.5 kills

No 119 Sqn pilot Moshe Melnik was one of four Kurnass reconnaissance crews who triggered the large-scale skirmish of 13 September 1973.

But for the loss of a delta-fighter, whose pilot ejected far from Israeli territory, the fighting would have ended much earlier than it did.

However, the time required to effect a rescue was generous enough to offer Melnik and his navigator Chaim Barkan the opportunity to swap their unarmed RF-4s for Kurnass 125 (seen here) and return to the action. They duly shot down a Syrian MiG-21, giving both crewmen (and Kurnass 125) their first kill. But only Melnik became an ace, in 1979. Kurnass 125 (ex-USAF 69-7225) was an early *Peace Echo III* aircraft, being among the first F-4s delivered to No 119 Sqn when it was established as a Phantom II operator on 29 October 1970. Just under eight years later, on 3 July 1978, the aircraft was the last No 119 Sqn Kurnass to be delivered to IAI for leading-edge wing slat modification

YOM KIPPUR WAR – THE CRUCIAL HOURS

The emergence of the Kurnass as the leading IDF/AF air-to-air fighter during the first nine months of 1973 was deceptive. Although its crews were credited with 12 kills, compared with seven for delta-fighter pilots, their primary mission was still ground attack. Despite its versatility, which was by contemporary standards unmatched, the Kurnass was no nimble dogfighter. But then the deltas could not compete with the Kurnass in the air-to-ground role.

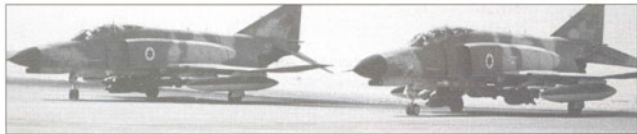
While the IDF/AF had to fight limited-scale border skirmishes, the Kurnass units were available for both air-to-air and air-to-ground missions. But it was plain that in a full-scale war, the four Kurnass units would be the Israelis' first-line attack aircraft.

With Mirage III and Nesher delta-fighters conducting air-to-air sorties and Skyhawks and Super Mysteres operating mainly over the frontline, the Kurnass force was to perform the most complex missions of them all – air base attack (ABA), battlefield aerial interdiction (BAI) and the suppression of enemy air defences (SEAD). There would also be strategic bombing sorties to be flown when the need arose. Finally, whenever possible the F-4s would re-enforce their lighter and smaller counterparts in combat air patrols (CAPs) and quick-reaction alerts (QRAs). Much was therefore expected of a relatively small group of just over 200 pilots and navigators flying roughly 100 Kurnass fighter-bombers and half-a-dozen RF-4E reconnaissance aircraft.

When the Egyptians and Syrians launched their simultaneous surprise attacks on Israel to start the Yom Kippur War on 6 October 1973, the IDF/AF's Kurnass force was supposedly a matured one. Yet despite four years in service, during which 25 aerial kills had been

No 107 Sqn's Kurnass 189 prepares to take off during the Yom Kippur War in typical Syrian ABA mission configuration, with ten general purpose bombs (three under the right wing, five on the centreline-mounted multi-bomb ejection rack and two under left wing), a single AIM-9D for self-defence and two 370-US gal tanks





recorded, together with numerous air-to-ground missions, the plain truth was that the IDF/AF actually had no technological answer to the Soviet-backed air defence force deployed by Egypt. In fact this had already enabled the Arabs to gain the upper hand in the air superiority struggle during the closing stages of the War of Attrition, when five Kurnass crews were lost to SAMs. In 1973, the IDF/AF's weapons technology and tactics had yet to mature.

The four Kurnass units were well-dispersed, with No 69 Sqn up north at Ramat David, No 107 Sqn down south at Hatzorim and Nos 119 and 201 Sqn based centrally at Tel Nof and Hatzor respectively. Call signs were allocated to section leaders from one of a number of groups – No 69 Sqn used women's names, No 107 Sqn furniture, No 119 Sqn professions and No 201 Sqn animals. Within these four groups, each leader had his own call sign so that 'Tiger 3', for example, would be No 3 in a No 201 Sqn formation led by the unit's senior deputy CO, Roni Holdai, whose personal call sign was 'Tiger'.

All four unit COs were ex-Mirage III pilots, with Yoram Agmon leading No 69 Sqn, Yiftach Spector No 107 Sqn, Eliezer Prigat No 119 Sqn and Yiftach Zemmer No 201 Sqn. Spector was a ten-kill ace, while Agmon had two, and would become an ace, but Prigat with a single kill as a Mirage III pilot was not to improve his air-to-air score while flying the Kurnass.

QRA SUCCESS

The Kurnass units took it in turns to provide a QRA detachment of two aircraft to Ophir, at the southern tip of Sinai, to cover the Red Sea approaches. Together with the Mirage III units, they also provided a four-ship formation detachment to Refidim, in Sinai, to protect the Suez Canal sector. At the outbreak of the Yom Kippur War, two No 107 Sqn jets were at Ophir, with a No 119 Sqn section at Refidim. Both Kurnass detachments were then recalled to their units, as their primary mission was ground attack, leaving the delta-fighters with responsibility for the Refidim QRA. Super Mysteres took over the Ophir QRA, where the main threat came from Egyptian assault helicopters. These moves, however, were accomplished only after great success in aerial combat.

Two more No 107 Sqn jets taxi out at the start of a mission in October 1973. Kurnass 175 (left), displaying two kill markings, carries CBUs, while 186 is armed with GP bombs. Spector and Manoff flew 186 on the 15 October ABA mission to Tanta which resulted in a squadron kill

The first day of the Yom Kippur War presented the Kurnass community with a chance to challenge the delta-fighters' MiG-killing monopoly. Four Kurnass crews were credited with at least three victories in a single mission on 6 October 1973. The men involved were No 107 Sqn's Nachumi and Yavin, Shaki and Regev and Egozi and Manoff, and No 201 Sqn's Peri and Amitay. The latter unit's Kurnass 609 (*Peace Echo* 1F-4E Block 40 68-0470), photographed here in 1977 as No 119 Sqn's 109, displays seven kill markings. Peri and Amitay were credited with three victories while flying 609 on 6 October 1973, and Halotz and Gal scored two more kills in it 17 days later





No 107 Sqn pilot Amir Nachumi (left) helps a ground crewman arm a Kurnass during the Yom Kippur War

Down south at Ophir, the senior pilot of the No 107 Sqn pair was Amir Nachumi, but he was not yet officially declared an interception leader. The QRA mission at Ophir was a nocturnal one, and at night Kurnass aircrews operated alone, with the second one of a pair acting as back-up. As a result, there was no need for an element leader at Ophir – at least not until 6 October 1973.

A graduate of fighter school class 57 in November 1968, Nachumi was older than most of his contemporaries. He had been called up in 1962, and volunteered for fighter school, but was washed-out of class 44 due to a lack of physical fitness.

As only a small percentage actually become aircrew, failed cadets join other IDF units, with many enlisting in the Armoured Corps – hence the adage 'once a pilot, always a tank crewman'. Nachumi was discharged in 1964 and went to Jerusalem's Hebrew University to study chemistry and physics. Graduating in the summer of 1967, Nachumi spent that June fighting the Six Day War from inside an AMX-13 tank. His desire to be a fighter pilot coincided with a requirement for additional aircrews to make good combat losses and enable the air force to expand. Nachumi's application to return to fighter school was accepted, and after graduation, he spent four months at an OTU flying the Ouragan.

His initial fast jet career was typical of the time. He flew the Ouragan until 1971, firstly as a regular and then as an emergency posting (EP) pilot. After about a year, squadron pilots went back to the fighter school as instructors for about six terms of four months, this arrangement allowing instructors to continue operational flying with their frontline unit on an EP basis for one day a week.

IDF/AF fighter units had three levels of aircrew availability: regulars, who included both commanders and the least experienced pilots, some of whom might not yet be fully operational; EP aircrew, who might be flying instructors or staff officers; and finally reservists. Although both EPs and reserve aircrews flew one day each week, the EP group was the more accessible. When tension along the borders increased and alert status was high, EPs were the first to be called up, as the mobilisation of reservists had wider economic and political implications.

At the end of each IDF/AF term, aircrew rotation for the next was agreed. To back up this periodic rotation, conversion courses were opened every term. The IDF/AF had no specific conversion units, this tasking being given to a frontline squadron under a rotational arrangement. Graduates would be reassigned to units flying a particular aircraft type.

In 1971 Nachumi completed his assignment as a qualified flying instructor and was selected for Kurnass conversion with No 119 Sqn. Graduates were assigned to all four Kurnass units, and Nachumi went to the recently-established No 107 Sqn, with which he served from 1971 to 1980, progressing from junior pilot to unit CO as he advanced from captain to lieutenant colonel.

When IDF alert status was boosted on the morning of 6 October 1973, the two Kurnass crews at Ophir assumed daytime QRA duty – a mission flown in pairs. As the detachment's senior pilot, Nachumi assumed command, but the local GCI had not yet appreciated the new situation. At exactly 1400 hrs, Egypt and Syria launched their attack. Under an artillery barrage Egyptian troops advanced across the Suez Canal, while the Syrians started breaching the Golan Heights anti-tank and anti-personnel obstacles. Overhead, the Egyptian and Syrian air forces flew Battlefield Air Interdiction missions. A single wave struck Israeli artillery, local headquarters, anti-aircraft artillery and surface-to-air-missile batteries and key command and control centres. Also attacked were two Sinai IDF/AF ground control units (GCUs) near the frontline bases of Refidim and Ophir, which were hit too.

Some 28 MiG-17s, and escorting MiG-21s, headed for Ophir low over the Red Sea. The alert siren was sounded but the Kurnass pair was not scrambled because the local GCI had failed to realise the significance of the attack. Losing patience at the sight of so many enemy aircraft near the base, Nachumi could wait no longer for the order to scramble. He recalled:

'I was nominated as interception leader that morning in a 'phone call with my CO, Yiftach Spector. It was an extraordinary assignment, as an interception leader in those days was almost "God". I decided to take-off, and seconds later the runway was bombed. Had we waited any longer we would have been unable to do so. There were seven four-ship formations of MiG-17s and MiG-21s. As the area to be defended was large, from Ophir to the Na'ama Navy base, I ordered my wingman Daniel Shaki to split. Each of us defended a sector.

'I attacked six aircraft, but the wreckage of only four jets was located on the ground so I was credited with four kills. They were MiG-17s, all scored with AIM-9Ds. I had four missiles but I also attacked two aircraft with my cannon. We could see hits on one of them. It didn't explode, but continued to fly. As for the other fighter we attacked with cannon, we didn't see it crash. I can only recall certain scenes from that combat. At one stage my left engine had a compressor stall following a cannon burst. For quite a while I fought flying on one engine until I managed to restart the stalled one.'

When it was all over Nachumi, and navigator Yossi Yavin, and Shaki, with David Regev, carefully landed on the damaged runway, avoiding bomb craters and debris. That same morning Ya'acov 'Yak' Nevo assumed command of Ophir air base, just one of many IDF/AF actions aimed at coping with the emerging crisis. A reserve officer, Nevo was himself a distinguished fighter pilot with three kills dating back to his days as a Mystere pilot in 1956-58. When the F-4s landed, Nevo asked Shaki, 'How many?' He replied, 'Seven. I shot down three, Nachumi shot down four'. The Yom Kippur War had just begun.

Future 8.5-kill ace Moshe Melnik poses beside No 119 Sqn's 'flagship' Kurnass 119 in December 1970. He claimed two Kurnass kills on 6 October 1973, and three years later was one of the first five IDF/AF pilots to convert onto the F-15. Melnik was also the first Israeli pilot to be credited with a kill while flying the Eagle, a feat he achieved in 1979. He commanded an F-15 squadron between 1981 and 1983



This May 1973 photograph reveals that Kurnass 141 was one of the first F-4s to be retrofitted with both leading-edge wing slats and the improved cannon blast diffuser. Moshe Melnik and navigator Zvi Tal used this aircraft to shoot down an AS-5 ASM (with an AIM-7) and an Su-7 (with an AIM-9D) on 6 October 1973



COMMANDO ASSAULTS

For taking the initiative, and for his part in the subsequent action over Ophir, Nachumi received Israel's second highest decoration, the Distinguished Service Medal – his navigator, Yavin, had also become the first backseat ace. Decorations and honours were, however, just future prospects, as the Kurnass aircrews were now fighting for their lives. A few minutes after Nachumi scrambled, the other Kurnass QRA detachment in Sinai took off from Refidim to defend Israeli ground units under Egyptian air attack. Moshe Melnik, with navigator Zvi Tal, led the No 119 Sqn QRA, and was credited with two kills. At first they shot down an AS-5 anti-radiation missile launched by an Egyptian Tu-16 bomber, followed by an Su-7.

Enemy aerial activity then declined. The initial wave of Egyptian and Syrian H-Hour strikes was not followed-up by further air raids. Arab strategy was to preserve their air forces, which meant that the struggle for air superiority over the frontline was to be fought between the IDF/AF and the Egyptian and Syrian air defence forces. From then on the Arabs launched only limited-scale air strikes, as well as defending their rear sectors from Israeli air attack, leaving the

maintenance of air superiority over the frontline to their air defence forces. This strategy lasted less than a week on the Syrian front and slightly longer on the Egyptian one. The situation then demanded a much greater commitment of air power to the fighting.

It was dusk when a major Egyptian commando effort posed an unorthodox challenge to the Kurnass community. F-4 crews were given the task of intercepting low- and slow-flying Mi-8 helicopters under barely acceptable light conditions over the desert. Dozens of Mi-8s penetrated Sinai, carrying Egyptian commandos tasked with attacking the IDF's thinly-defended key rear sector installations and setting ambushes to create havoc among Israeli reinforcements. With most IDF frontline units already committed to the fighting, and with the reserves still being organised, only meagre forces were ready to face the commandos. That fateful dusk it was the F-4s which actually tipped the balance. The teamwork between the two crew in each Kurnass, plus the jet's combat ability, provided the critical element.

As a result, Kurnass interceptors smashed two major Egyptian raids, at Ras Sudar in the southern sector and at Tasa in the centre. The big fighter-bombers arrived when the Mi-8s had almost reached their designated landing points. The crews were soon to find that fighting Mi-8s was a very different form of air combat. Engaging the slow, low-flying helicopters was more like attacking vehicles on the ground than combat aircraft. Ground strafing techniques were to be more useful than air-to-air tactics.

Ran Goren was a fighter unit CO flying as an EP with No 107 Sqn. He was already credited with two kills as a Mirage III pilot, and his next assignment was to be as CO of No 201 Sqn. Now he was the first to engage the Mi-8s, as he later recalled;

'At noon I was the leader of the first QRA pair, with Dubi Yoffe as my wingman, and we were scrambled to the Suez Canal. We were vectored to intercept attacking Egyptian aircraft, and we saw the smoke of various air raids from a distance, but by the time we got nearer there were no aircraft to engage as they had already retreated. The first time we jettisoned our external fuel tanks, but I wasn't worried about our fuel state as I thought we could land at Refidim. When we'd completed these futile interceptions, Yoffe had enough fuel to return to Hatzetim but I didn't, so I contacted Refidim over the R/T and asked to land there. The answer was, "Refidim was bombed, you cannot land here". I said, "I'm low on fuel. I've no other option, I must land". I was told, "Land on the parallel runway". That was only 20 metres wide, compared with a normal width of 45 metres, but it was apparently less damaged than the main runway.

'I landed and taxied to the QRA HAS (hardened air shelter). I noticed a number of No 119 Sqn Kurnass nearby from an older production block. Throughout this

This 12 October 1973 photograph shows Ran Goren (left) nonchalantly describing how he had ejected from his F-4 after it had been hit by Syrian AAA during an ABA mission to Damascus Elmazra earlier that same day. Listening to his story are Oded Poleg, Yiftach Spector and Shlomo Egozy. Six days earlier Goren had been scrambled from Hatzetim at noon with navigator Yossi Ye'ari in Kurnass 15, but switched to a No 119 Sqn aircraft before shooting down a Mi-8 helicopter. On 9 October No 107 Sqn pilot Yoram Peled and navigator Boaz Lerner had to eject from Kurnass 15 whilst on an operational mission due to a technical malfunction which may have been caused by the damage sustained during Goren's unscheduled landing at Refidim three days earlier



ordeal I didn't meet the No 119 Sqn aircrews as they were all airborne. When the groundcrew worked on my jet, they noticed a hole in the auxiliary air intake door caused by a stone thrown up by the wheels when I landed on the narrow parallel runway. They improvised a patch and told me, "Your aircraft is okay. You can fly home".

I taxied to the parallel runway, and when I started the take-off run I got a flat tyre. I was going pretty fast and had to decide whether to abort the take-off or try to accelerate a bit more in order to achieve flight. I decided that if I continued we'd crash, so I aborted. I managed to keep the aircraft on the narrow runway. I turned away so as not to block the runway, switched off the engines and waited for a jeep. By then it was about 1700 hrs, and when I arrived at the QRA HAS I noticed a Nesher there. I don't know where I got this idea from, but I said to the Nesher pilot, "We're a pair from the No 119 Sqn QRA". I notified GCI we were ready, but it was getting dark so I figured that there was a slight chance of being scrambled. About 15 or 20 minutes later, a siren went and we were scrambled!

"We rushed to the aircraft and GCI told us, "Helicopters flying east. Scramble, heading 270". We took-off on the parallel runway. It was 1745 hrs, and getting dark. Suddenly I saw 12 Mi-8 helicopters flying at low altitude in a diamond formation. I dived, opened fire and missed, but they scattered all over the place. A helicopter was a difficult target. We could attack it with a fixed sight as if it was a ground target but moving really fast, or with a gyro-sight as though it was an aircraft flying very slowly. Another difficulty I experienced was that the switches in the earlier block aircraft were unlike those in our later ones. But that was the least of my troubles.

"I attacked one helicopter, again using my gyro-sight, and this time it exploded. By then it was 1800 hrs, and dark. I wanted to return the aircraft to Refidim. I contacted Refidim but the answer was, "No landings here at night". I was in a dilemma. I had plenty of fuel, since we had not used afterburners in the engagement, so I could fly either to my base at Hatzetim or to the F-4's at Tel Nof. I decided to return the jet to its owners at Tel Nof. I took the gun film as evidence of the kill, and we organised transport to Hatzetim aboard a Nord Noratlas transport flying an engine to the base. We arrived at 2000 hrs.

"Since taking off at about 1400 hrs, we had been vectored to engage, landed on a damaged, narrow parallel runway, our aircraft was damaged and patched, we'd got a flat tyre and aborted a take-off, we'd improvised a QRA pair flying another squadron's aircraft with a Nesher as wingman, we'd been scrambled, we'd shot down a helicopter and we'd flown the aircraft back to its base and returned home in a Noratlas. Quite a crazy day!

"Only in retrospect did I realise the importance of our action. There were 12 Mi-8 helicopters, each carrying 25 commandos. The one we shot down crashed just outside the perimeter of Refidim. If 300 Egyptian commandos had attacked the base that evening when it was not yet properly secured and the local troops were still shocked by the Egyptian air raids, the consequences can be easily imagined.

"Since then, whenever Eliezer "Cheetah" Cohen, who was Refidim CO, meets me, he announces, "Here's the pilot who saved Refidim!"

A No 201 Sqn four-ship formation on a CAP mission was also vectored to intercept the low-flying Mi-8s. Navigator Itzhak Amitay recalled:

'My first sortie during the Yom Kippur War was with Ben-Ami Peri. GCI vectored us to engage MiGs, but we found none. Instead, we evaded SAMs and exhausted our fuel, before returning to base. We were then scrambled to fly a CAP, but while airborne, the pair we were leading was joined by another. We continued the patrol as a four-ship formation, with Eitan Peled leading. The Egyptians launched many SAMs towards us, so we quickly learnt to fly on the boundaries of the Egyptian ADF SAM envelope. It was dusk and we were looking for the helicopters, as GCI had told us that they were there. Suddenly, someone shouted, "There they are". And they were – six Mi-8s in a perfect formation at low altitude. Flying in a circle, we took turns in attacking them.

'We had practiced helicopter interception scenarios, and we knew it was a tough mission. We could not lock our radars onto them as they flew so low. Peri, with his sight in cage position, attacked them like strafing a ground target. In four passes we shot down three helicopters. They were definite kills. It was a surreal scene, with helicopters catching fire at dusk. I concentrated on two vital issues during the engagement – not losing sight of the helicopters, and watching for any external threat, especially SAMs, so that Peri could concentrate on flying and shooting down the helicopters.'

Ben-Ami Peri and his navigator Itzhak Amitay shot down three Mi-8s, Eitan Peled and Abraham Ashael destroyed two more and Moshe Koren and Ilan Lazar claimed a sixth. Finally, a No 201 Sqn pair also joined in the combat, Yonatan Ophir and navigator Avikam Lif hitting two helicopters. They were credited with a single kill, as the second Mi-8 managed to limp back home to Fayid.

This July 1973 photograph shows Kurnass 151 equipped with a multiple ejector rack under the fuselage and a triple ejector rack under each inner wing station. Shlomo Egozy, No 107 Sqn's senior deputy CO, and navigator Roy Manoff were credited with five kills while flying Kurnass 151 at dusk on 6 October 1973, the crew cutting a swathe through Egyptian Mi-8s attempting to land commandos behind Israeli lines. Wingmen Yoffe and Pereg shot down a sixth helicopter. This aircraft did not survive for long, however, as it was shot down on 12 October 1973. Pilot Ran Goren and navigator Micha Oren ejected over Israeli territory



At the Ras Sudar sector, No 107 Sqn senior deputy CO Shlomo Egozy and navigator Roy Manoff soon learnt that launching AAMs at the Mi-8s was useless, as the available technology made such an engagement impractical. Egozy and Manoff then shot down four Mi-8s with cannon fire and finally resorted to using the blast from their jet exhausts, smashing the helicopters to the ground as they pulled up in full afterburner after a close overhead pass. Egozy's wingman, Dubi Yoffe, got another Mi-8 before he had to disengage – the two Kurnass were flying in different configurations, Egozy's jet having three external fuel tanks and Yoffe's only two.

Egozy continued to fight the helicopters until the delta-fighters arrived, the latter downing two more helicopters. During this combat Egozy became the second IDF/AF aircrewman to achieve ace status while flying the F-4 when the first four Mi-8 kills were added to his 13 September 1973 victory. With the fifth Mi-8, Manoff became the third Kurnass ace, and the second IDF/AF navigator to become an ace.

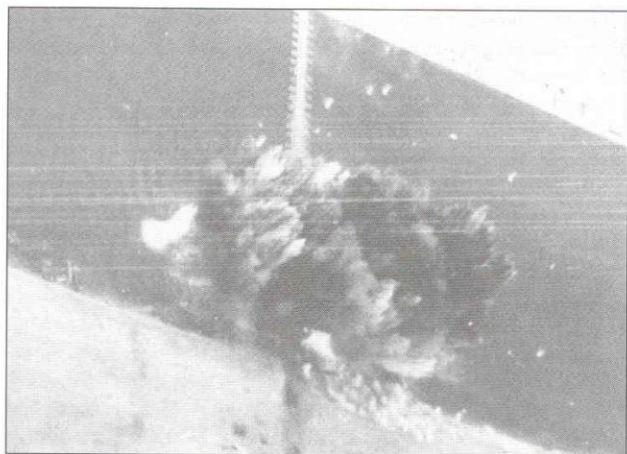
ADF CHALLENGE

The air-to-air achievement of the Kurnass force on 6 October 1973 was huge. The crews had shot down 23 enemy aircraft, all Egyptian – 14 Mi-8s, six MiG-17s, one AS-5, one MiG-21 and a single Su-7. On the very same day the IDF/AF delta-fighters were credited with just eight kills. As in the first nine months of 1973, the Kurnass aircrews proved their superiority over the delta-fighter pilots in aerial combat. Yet when the overall Yom Kippur War results were analysed, it became apparent that the delta-fighter pilots had shot down more than twice the number of enemy aircraft credited to the multi-role Kurnass.

On day one of the war, Kurnass aircrews had had to face the surprise Arab attack, hence the 23 aerial kills they scored represented more than a quarter of those eventually credited to them during the Yom Kippur conflict. In the coming days the Kurnass force flew mainly air base attacks, battlefield interdiction and air defence suppression missions, leaving aerial combat to the delta-fighters. If fighter-bomber aircrews had had the same air combat opportunities as those of the delta-fighter pilots, the four Kurnass units would probably have achieved higher scores. However, over the next ten days or so, when IDF ground forces were holding their positions in the Sinai peninsula and pushing the Syrians back in the Golan Heights, the most likely time for a Kurnass crew to encounter a MiG was en route to a high value target.

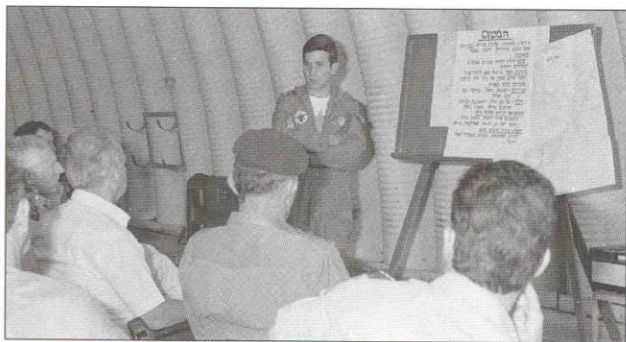
At such times they would be loaded with bombs and determined to ignore all threats as they pressed on to the target. This was certainly not fertile ground for aces, yet F-4 crews still managed to down MiGs. But when they did, it was often at the expense of a successful attack. If a pilot had to jettison ordnance target-bound to survive, even a kill could not disguise the fact that the MiGs had achieved their objective.

Attacks on enemy air bases resulted in four of the five kills credited to Kurnass aircrews on 7 October. Emphasising the confusion within the IDF's leadership, the war's first major IDF/AF operation against enemy air defences was launched against the Egyptian ADF on the morning of 7 October. Selection of this target ignored the situation on the ground. Egyptian troops had advanced a mere ten kilometres into



Sinai, so there was still a huge area of desert for them to cover before reaching the pre-June 1967 border between Egypt and Israel. Sinai acted as a huge buffer zone, but nothing like it existed up north in the Golan Heights where, by the end of the first day's fighting, Syrian forces had actually reached the line of the previous border between Israel and Syria. The danger faced by Israel in the north was therefore more pressing than in the south. Air superiority and air support were crucial on the Syrian front, yet the IDF/AF defence suppression operation was launched against the Egyptian ADF.

Codenamed Operation *Tagar* (Skirmish), the Kurnass mission on the first wave of the operation was to attack the prime Egyptian air bases at Beni Suef, Bir Arida, Gianclis, Kotamiya, Mansura and Tanta. Israeli missions at this time were not aimed at achieving air superiority as in the Six Day War. Six years on, it was plain that a similar feat could only be achieved by defeating the Egyptian ADF. Moreover, the Egyptians had learnt the lessons of the Six Day War pretty well, and had prepared their air bases to avoid a repetition of the disastrous losses suffered on the ground. Hardened shelters had been built, parallel runways laid to minimise vulnerability to bomb damage, battle damage repair teams trained and dispersal sites prepared. Yet missions against these bases were to have a significant impact on the ground fighting.



Left and above

BAI missions to destroy Egyptian Suez Canal bridges cost the F-4 force four aircraft in the first 48 hours of the Yom Kippur War. No 119 Sqn lost Kurnass 124 on 6 October and No 69 Sqn had Kurnass 177 shot down the following day. Both were brought down by SAMs, No 119 Sqn's Yis'saschar Naveh and navigator David Zilberman being killed and No 69 Sqn's Ami Alkalai and navigator Yehoshua Wolfson becoming PoWs. The remaining No 119 Sqn aircraft was lost on a nocturnal cluster-bombing attack on Egyptian reinforcements, while the No 69 Sqn F-4 failed to return from a day dive-toss attack on the bridges. These photographs were taken from combat camera films shot early in the war

No 69 Sqn pilot Yoel Feldsho was credited with his first kill during an ABA mission to Gianclis on the morning of 7 October 1973. This was also the first of three eventually credited to his navigator on the day, Meir Gur. Feldsho later added three more kills as an F-15 pilot, and he is seen here in October 1984 as an Eagle squadron CO briefing Defence minister Yitzhak Rabin – flanked by IDF/AF CO Amos Lapidot, to his left, and IDF CoS Moshe Levi (in paratrooper's red beret) to his right – on the F-15's merits. Exactly a year later Feldsho flew an F-15 in the longest (1280-mile) IDF/AF bombing mission ever staged when jets attacked the PLO HQ in Tunis in October 1985

Whenever the IDF planned a large-scale offensive at the front, it was important to keep Arab aircraft away from Israeli troops conducting these campaigns. Timely airfield attacks achieved just that, because it took several hours to return a base to full operational status following a successful air strike.

While the main F-4 force was approaching the primary Egyptian bases, the remaining Kurnass fighter-bombers, along with the Skyhawks, were teasing Egyptian anti-aircraft artillery. With EAF bases neutralised for the next few hours, the targets switched to the primary elements of the Egyptian ADF – radar stations and SAM batteries.

On 7 October, the attacking Kurnass force and the defending MiG-21s clashed during attacks on Gianclis and Mansura. At Gianclis, the trailing Kurnass pair jettisoned their bomb loads to engage defending MiGs. Yoel Feldsho, with navigator Meir Gur, and his wingman Zvolon Amitzi, with Gur Israeli, were each credited with a single MiG-21 kill. The No 119 Sqn attack on Mansura achieved a similar result, although in this case the air combat was fought after the bombing. Arnon Lapidot (Levoshin), with navigator Chaim Katz, shot down a MiG-21 with cannon, while wingman Rafael Koren and navigator Moshe Bartov used an AIM-9D to perform a similar feat.

The second wave of Operation *Tagar* never materialised. The Egyptian ADF had won the first round of the air superiority struggle. The operation was called off when the IDF leadership finally realised the danger in the north. Returning from the Egyptian front, Kurnass aircrews were hurriedly briefed for a major operation against air defences on the Syrian front. Operation *Dogman* (Model) turned into a complete fiasco, costing the Israelis six precious Kurnass fighter-bombers and leaving the Syrian ADF intact.

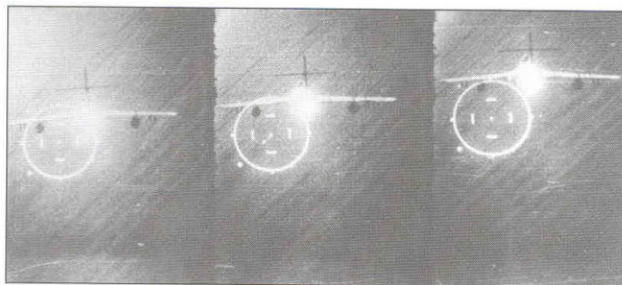
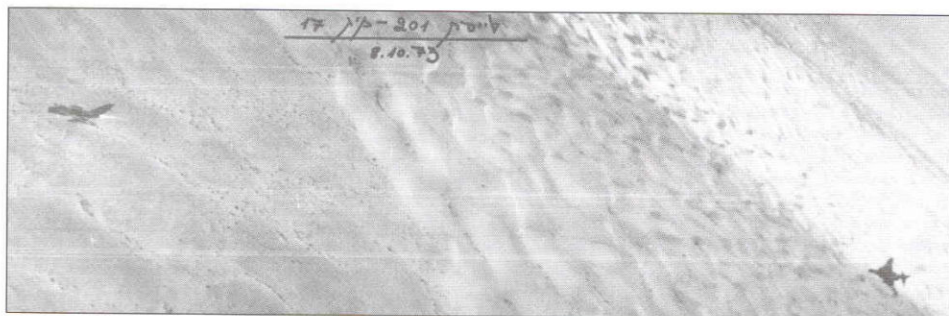
A slight compensation resulted from a rare Kurnass scramble and air combat over Mount Hermon, where No 69 Sqn's Ze'ev Raz and navigator Chaim Shachar shot down a Syrian MiG-21 with cannon.

As the second day of the war ended, the Kurnass units had more than doubled their pre-war score in aerial combat from 25 to 53 kills. Among the four Kurnass units, 17 kills were credited to No 107 Sqn, 16 to No 201 Sqn, 12 to No 119 Sqn and eight to No 69 Sqn.

Following the emergence of the first Kurnass aces Yavin, Egozy and Manoff, the crewmembers closest to achieving ace status on the type were Itzhak Amitay (four kills), Amir Nachumi (four) and Eitan Peled (four). Aviha Ben-Nun also had four kills, two of which came whilst he was a Mirage III pilot, Amnon Arad had 3.5 kills, including 2.5 with the Mirage III, Omri Afek had three, including two on the Mirage III, Ran Goren had three, including two as a Mirage III pilot and the late Ehud Henkin had three, with two scored while flying the Mirage III. Henkin had been killed during Operation *Dogman*.



Ramat David base groundcrews remove No 201 Sqn Kurnass 615 from the runway after pilot Gad Samok landed the already damaged aircraft at the airfield on 7 October 1973. He was returning alone from the doomed *Dogman* SEAD mission over Syria, navigator Avikam Lif having ejected into captivity. Note that Kurnass 615 had already been modified with an IFR probe, an improved cannon blast diffuser and leading-edge wing slats



'Immediately after my burst, Eitan (Ben-Eliyahu) yelled that there was no pilot in the MiG-17's cockpit. My fuel state was only 3500 lbs, and I planned to disengage when my navigator Aran Cohen warned me that there were two MiGs on our tail. I did a high-speed yo-yo and followed one of them. With the fuel state now down to 3000 lbs, Cohen locked the radar at a range of 450 m and I fired the cannon but missed. We got closer, and at 300 m I opened fire again – a long burst this time. The MiG was definitely hit but didn't explode. It continued to turn to the left, dropping its nose until it hit the ground. The pilot ejected.'

Holdai and Cohen were credited with two kills. Ben-Eliyahu, with navigator Paltiel Barak, got a single, and the fourth MiG-17 was listed as a 'squadron kill'. The latter was in a scissors manoeuvre with Eli Zohar and his navigator Beni Kiryati when the pilot lost control and crashed. It was a classic 'no weapon' kill, but by then the rule had been

Above and left

After completing a BAI dive-toss operation against Suez Canal bridges on 8 October, four No 201 Sqn Kurnass crews intercepted EAF MiG-17s. The Egyptian jets had also been on a strike mission, as shown by the empty bomb racks just outboard of the external fuel tanks in the gun-camera sequence (left). Roni Holdai and navigator Aran Cohen shot down two MiGs, including the one pictured. Both MiG-17 pilots ejected. The action captured by the gun-camera sequence was also photographed from above by the bomb damage assessment camera fitted in Eitan Ben-Eliyahu's F-4

No 201 Sqn Kurnass 622 was already a MiG killer when this photograph was taken. The victory marking below the windscreen represents an Su-7 shot down by Holdai and Amitay on 19 October 1973. No 622 (USAF 68-0417) later became 122, and as a result No 107 Sqn's Kurnass 122 was renumbered 222



changed so that such victories were theoretically awarded to the unit. There were exceptions to the rule, but the 'no weapon' kill remained a gray area between the clear-cut victory and an obvious miss.

Another 'exceptional' victory occurred that evening. Yossi Eliel of No 201 Sqn was flying a lone CAP over Ophir when the Israeli Navy reported an Egyptian Mi-8 over the Red Sea. Although a radar lock was obtained by the Kurnass crew, no visual identification was possible. Once GCI had been assured that there were no Israeli ships in the area, permission was given for Eliel to open fire. An AIM-7 was launched, the target vanished and the Navy reported an explosion, with a lot of debris observed. The crew was convinced that they had shot down an Mi-8 but no kill certificates were forthcoming.

GOLAN HEIGHTS OFFENSIVE

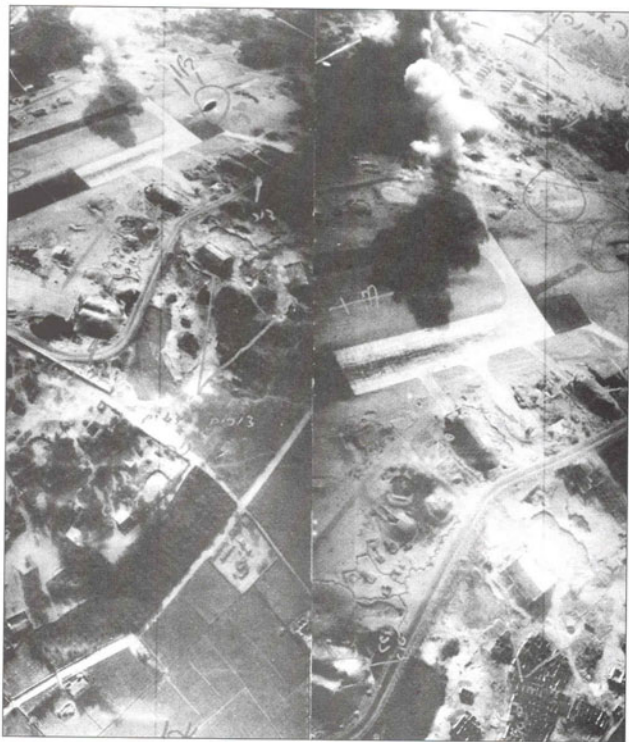
No daytime kills were credited to the Kurnass force on 9 October, but that evening, roughly 24 hours after No 201 Sqn had achieved the first 'unofficial' all-weather kill of the war, a second nocturnal victory was credited to the Kurnass. A pair of No 119 Sqn crews was briefed to fly a unique mission. Armed with bombs and flares, they were to sortie deep into Syria searching for signs of the Iraqi expeditionary force that intelligence sources had indicated was on its way to the Golan Heights. Syrian MiG-21s were scrambled to intercept the intruders, and in the ensuing combat Omri Afek and navigator Ze'ev Ze'evi shot down an SAF fighter with an AIM-7.

Israel concentrated its efforts on the Golan Heights front. The Syrians were pushed back to the pre-6 October front and beyond, bringing Damascus within artillery range by the 13th. Egyptian forces in Sinai, meanwhile, remained static, enabling the Israelis to concentrate on defeating the Syrians. This was reflected in the rate of Kurnass kills in the five days between 9 and 13 October – ten on the Syrian front and six on the Egyptian. This was the only period during the war when Kurnass victory claims on the Syrian front exceeded those on the Egyptian.

All five Kurnass kills on 10 October were claimed over the Syrian front, the first of these (a MiG-17) being downed by No 69 Sqn's Amnon Arad and navigator Zvi Edan during a morning CAP. This kill took Arad's score to 4.5 and Edan's to two. They could not know that they would not score again. At noon the Kurnass force targeted bases

Two Iraqi Hunter squadrons, operating from Qwisna, in Egypt, attracted the attention of a No 119 Sqn ABA mission on 10 October 1973



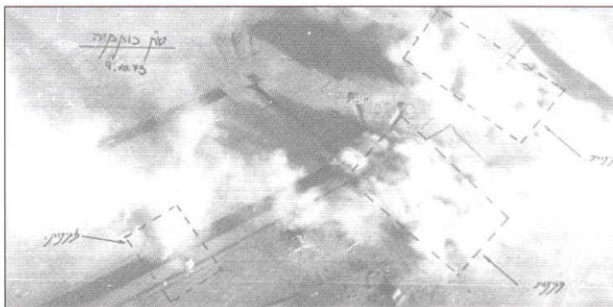


at Blai and Damascus International Airport which housed attack aircraft – Nos 107 and 119 Sqns bombed the former while Nos 69 and 201 Sqns headed for the Syrian capital. The result was four MiG-21 kills.

On their way to Damascus, No 69 Sqn's Yitzhak Gat and navigator Zvi Edan were chased by a MiG-21 whose pilot suddenly ejected when the F-4 manoeuvred onto his tail. It was a classic 'no weapon' squadron kill, as Gat recalled;

'There were 12 aircraft, and I was No 3 in the third four-ship formation. Just as we turned towards Damascus, one of the navigators

Both Nos 107 and 201 Sqns flew ABA missions to Abu Hamed on 10 October. Neither encountered aerial opposition, nor suffered losses. En route to Abu Hamed, No 107 Sqn pilot Naftali Maimon suffered a bird-strike, and although his windscreen was smashed he pressed-on



Ben-Ami Peri led No 201 Sqn's Kurnass ABA mission to Kotamiya on 9 October 1973. In a second mission flown later that day, No 107 Sqn's 'Carpet' section lost Kurnass 181, pilot Har'el Gilutz and navigator Yosef Ye'ari ejecting over the Gulf of Suez. They were rescued by helicopter. These missions yielded no aerial kills but cost two Kurnass – the No 119 Sqn example and No 69 Sqn's No 231 (ex-USAF 71-1789), which was shot down on 20 October. David Zait and navigator Yoram Rubinstein became PoWs in Egypt. Both losses were attributed to Egyptian ADF units defending the base

The Tsalchiya ABA mission on 11 October 1973 turned Eitan Peled into an ace. Some of the base's hardened shelters are clearly visible in this photograph, as are the long parallel runways which replaced the more vulnerable pre-Six Day War intersecting strips



shouted "MiGs". A MiG attacked my wingman. I pushed the "panic" button and manoeuvred right behind him. I was 200 m behind, and was just about to squeeze the trigger, when he ejected.'

A second similar kill was awarded to No 119 Sqn over Blai when a MiG-21 engaged in a scissors with Moshe Melnik. It lost control and crashed. Also attacking

Blai that same day were 16 orange-tailed Kurnass flying in two formations – 'Buffer' section, led by Yiftach Spector, and 'Bed', with Israel Krieger as leader. Piloting 'Bed 2' was No 107 Sqn EP pilot Naftali Maimon, with Oded Poleg (another pilot) in the back seat. Maimon recalled;

'It was the late afternoon, and we flew west into the sun, so when we pulled-up we saw almost nothing – visibility was poor. We released the bombs and then Poleg shouted "break". I broke hard and the intercom ceased to function – a typical malfunction when abruptly pulling more than 3-4G. I then saw a MiG overtaking, but not really threatening us. I flicked the switch on the stick that we called *Mama* (the Hebrew abbreviation for fast transition to air-to-air). As far as I can recall I didn't push the "panic" button, for there was no time. It all happened very fast – a switch from bombing to air combat, and it only took 20 seconds from the moment I saw the MiG until I launched an AAM.

'I got organised on his tail, but he was chasing another Kurnass piloted by Uri Bakal. Both the MiG and the Kurnass were inside the frame of my sight so I didn't launch. I heard the missile's tone, but waited. They opened up the distance as they were faster than me. The MiG pulled away from Bakal – he may have launched an AAM at Bakal. Only when the MiG was within the frame of my sight did I launch an AIM-9D. By then the range was more than a mile. We didn't lock our radar, so I can only estimate it. For those AAMs, this

was a very long range, especially at low altitude and high speed. We were right behind the MiG. The missile flew for a long time, maybe 10-15 seconds. I'd almost lost hope when there was an explosion. It was pretty simple.

'We had flown an ABA mission – not very successfully I think – when I saw a MiG. I pointed my nose right after him. I waited. It landed.'

Yiftach Spector witnessed Maimon's kill, and commented;

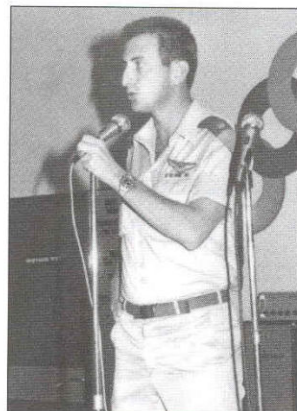
'We descended east, scratching the ground. Pairs of Kurnass afterburners were flickering like eyes and MiGs were passing by. Suddenly a flame – an AAM finding its way between all of us, homing perfectly towards a MiG-21, and then an ejection.'

Spector himself then entered a scissors with a MiG-21. Ordering all Kurnass aircrews to disengage and head for home, he stayed behind for a duel. After three scissors manoeuvres the MiG's rudder reached full deflection. The experienced Spector immediately realised what would happen next. The MiG skidded, stalled abruptly, entered a spin and crashed. At the last moment the pilot ejected, but his parachute did not fully deploy.

THE FOURTH KURNASS ACE

The war's sixth day opened well for the Kurnass aircrews when they scored three kills during morning air base attacks. Two of the kills were 'no weapon' cases credited to No 107 Sqn during its return from Saikal, in Syria, and to No 201 Sqn, attacking Tsalchiya, in Egypt. The second kill during the Tsalchiya mission represented a significant milestone in Kurnass history for Eitan Peled, who was leading No 201 Sqn's 'Dog' formation, became the IDF/AF's fourth Kurnass ace.

The usual tactic for attacking air bases involved between eight and sixteen aircraft flying in two waves. The smaller, leading formation attacked the air defences, dive-tossing or lofting cluster-bombs on AAA positions and SAM sites, and then providing a CAP to protect the main force attacking the runways with general purpose bombs. Air combat was not uncommon, as the Egyptians had ample warning time despite the ultra low altitude penetration thanks to a network of manned observation posts which augmented radar coverage.



Now Mayor of Tel Aviv, Roni Holdai was No 201 Sqn's senior deputy CO when he succeeded Eitan Ben-Eliyahu in September 1973. Ben-Eliyahu became a staff officer, although he continued to fly with the unit as an EP. When the Yom Kippur War broke out on 6 October 1973, Holdai was the acting CO, as Yiftach Zemmer was on a formal visit to the US and did not return until the 8th. Holdai was credited with four kills between 8 and 23 October 1973

No 201 Squadron Kurnass 673 (ex-68-0525) takes off during the Yom Kippur War in air-to-air combat configuration, carrying four AIM-9Ds, two AIM-7s, an electronic warfare pod and three external fuel tanks. This aircraft was lost in air combat on 11 October 1973



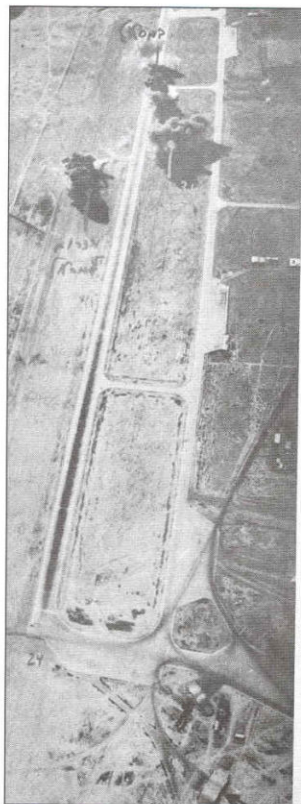
No 201 Sqn Kurnass 640 (ex-68-0456) departs its base during the Yom Kippur War in typical asymmetrical air-to-ground configuration. A MiG killer, this jet was also lost in air combat on 11 October 1973

Before 'Dog' section could complete their mission against the air defences, the MiG-21s were already right behind them. Peled ordered 'Dog 3' – Chaim Rotem with navigator Yehoar Gal – to break, as a MiG was on their tail. He immediately turned towards it, but before he could open fire the MiG crashed. Then Peled and navigator Amiram Talmon turned their attention to another MiG-21. With the cluster-bombs still under their aircraft's belly, they opened fire. They saw many hits, but to their frustration the MiG did not explode and they made way for 'Dog 3'. Rotem opened fire and hit the MiG, Yehoar Gal shouting over the intercom, 'We shot him down'. But Rotem replied, 'No we didn't. There's no pilot in the cockpit. Eitan (Peled) shot him down'.

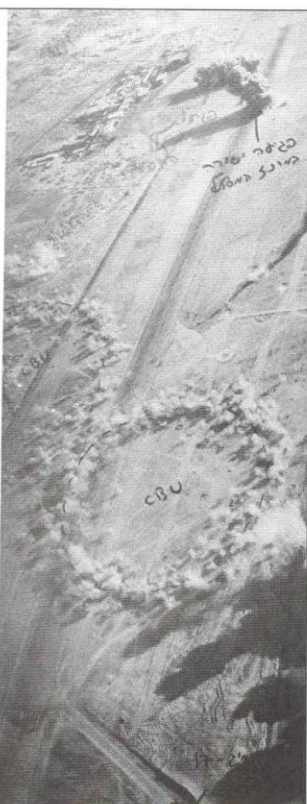
The fourth Israeli pilot to become an ace while flying the Kurnass, Eitan Peled had graduated from fighter school class 47 in July 1965, along with Mirage III ace-to-be Israel Baharav (12 kills) and future Kurnass pilots Omri Afek (four), Shlomo Egozy (eight), Roni Holdai (four), Arnon Lapidot (three) and Eli Zohar (one). Unlike his classmates, who were all assigned to the Mirage III, Peled flew the Super Mystere, logging 16 operational sorties during the Six Day War. He converted to the Kurnass in late 1969, but unlike the first two Kurnass 'instant' aces – Egozy achieved his first five kills in two combats in less than a month, while Manoff 'made ace' in a single engagement – Peled took three years to get his first five victories, being credited with a single kill in five separate battles.

Several hours after the Kurnass force had acclaimed its third ace No 201 Sqn was rocked by the loss of two aircraft in a single air combat. In addition to 'tactical' missions, the F-4 crews also flew 'strategic' operations, beginning on 9 October. This followed a successful Syrian FROG surface-to-surface missile (SSM) attack on Ramat David air base during the night of 8/9 October.

Although in retrospect it is difficult to understand the difference between daily air strikes on bases and the single Syrian nocturnal SSM attack on an IDF/AF base, the Israeli leadership decided to retaliate fiercely. A strategic campaign was swiftly launched in an effort to deter further attacks and to disrupt the Syrian war machine. Kurnass missions were now switched to high-value targets not directly relevant



The different, but complementing, impacts made by cluster and general purpose bombs are clearly visible in these BDA images taken after an attack on Damascus Elmaza on 11 October. Cluster bomb damage is scattered over a large area, demonstrating the weapon's prime purpose as being the suppression of air base defences. The GP bomb, with its concentrated effect, was more effective against installations



Yonatan Ophir and navigator Aran Cohen – and 'Crab 4' – Kobi Hayon and navigator Uri Arad – were both shot down. Ophir and Cohen were killed and Hayon and Arad became PoWs. The two aircraft lost (673 and 640) were both MiG killers. The pilot of a MiG-21 engaged by 'Crab 1' – Eitan Ben-Eliyahu – ejected for reasons unknown, but the resulting single squadron kill could not compensate for the loss of two jets and four crewmen.

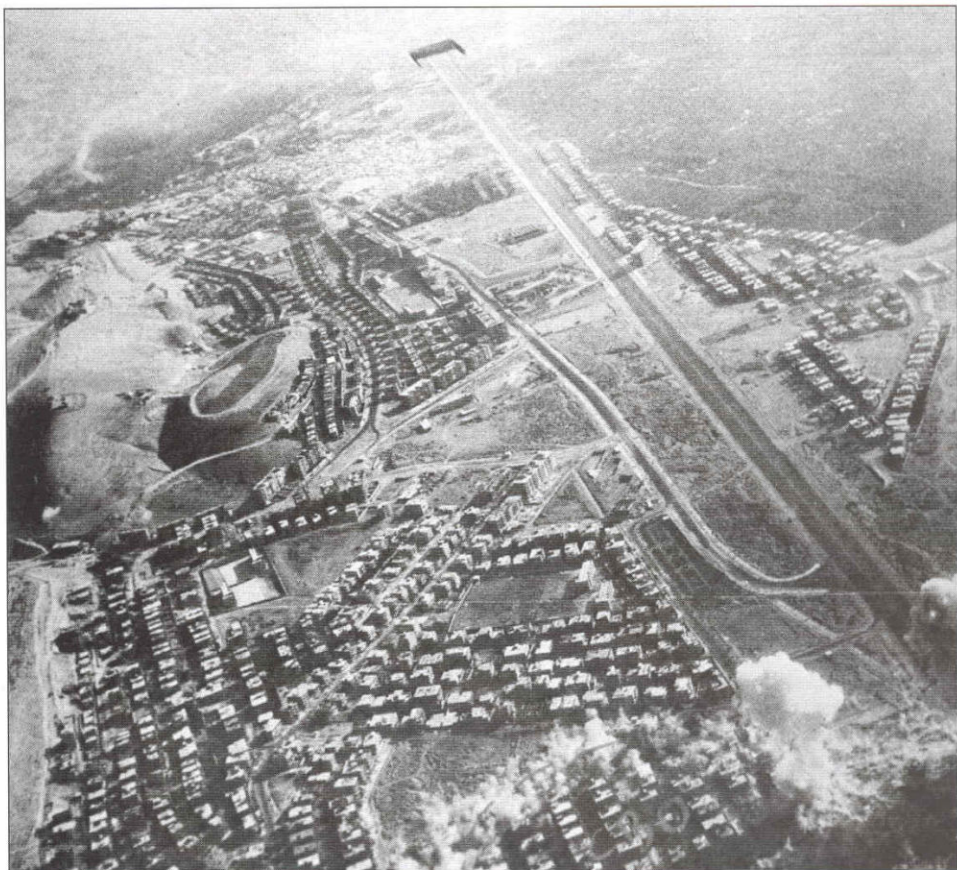
THE FIFTH ACE EMERGES

Attacks on air bases on the morning of 12 October yielded three further Kurnass kills, the F-4s flying missions against Syrian air force bases throughout the day in support of the successful Israeli Golan Heights counterattack. In the morning, No 69 Sqn attacked Dmair and Nazariya, No 107 Sqn targeted Elmaza and Saikal, No 119 Sqn hit Blai and No 201 Sqn struck Damascus airport and Khulkhul. As usual, the aim was to neutralise the bases for a few hours so as to lift the threat of Syrian raids on the ground forces. With Israeli communications and electronic intelligence monitoring SAF activity, it was easy to verify the success of the missions. Blai was closed for six hours, Damascus for four and Nazariya for three. Khulkhul, however, was out of action for a full 24 hours, which was considered a major

to the actual conduct of war, such as military headquarters, tank repair workshops, bridges, power stations, refineries and fuel storage depots.

Although Egypt was the first to launch a strategic bombing mission when a Tu-16 bomber fired an AS-5 ASM at the IDF GHQ in Tel Aviv on 6 October, the Kurnass campaign concentrated on Syrian targets. By the end of the war it was estimated that half of Syria's fuel storage facilities and electricity generating capacity had been destroyed.

One of few missions flown deep into Egypt was the attack on the Banha communication exchange centre, to which eight No 201 Sqn Kurnass aircrews were assigned. The bomb-carrying 'Young Lion' section was in the lead, with 'Crab' trailing behind to clear their tails. The bombing was successful and, with the target destroyed, several of the crews relaxed. But the worst lay ahead. This time the MiG-21s' interception procedure was both perfect and successful. 'Crab 2' –

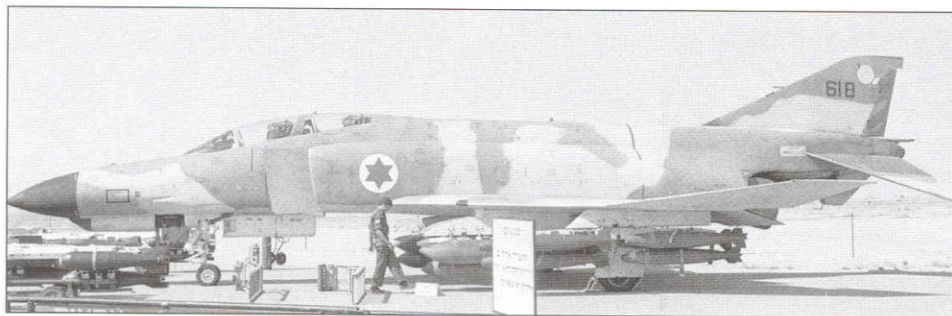


Damascus Elmaza was a high-value target. MiG-17s based there operated not only from the airfield itself, but also from the adjacent road, which acted as a landing strip. The MiGs flew countless BAI and CAS missions over the Golan Heights. Heavily defended, Elmaza cost the Kurnass force two fighter-bombers, No 107 Sqn losing an F-4 on 12 October and No 201 Sqn a jet the following day. Both crews were rescued

success. Defending MiGs were encountered over four of the seven targets, and at Khulkhul and Nazariya the attacking crews managed to avoid them, but combats developed over Dmierz and Damascus.

The bomb-laden No 201 Sqn four-ship formation had successfully evaded MiG-17s en route to Damascus, but just as the bombing was completed lead pilot Adi Benaya, counting his formation mates, stopped at five! He was interrupted by the arrival of two intercepting four-ship MiG-21 formations. Benaya soon got onto the tail of one of the MiGs, and just as he prepared to launch a missile, navigator Amiram Talmon called for him to break. Benaya did so, and an AAM raced close by – Talmon had saved them.

The same thing happened to Gil Regev and navigator Eitan Shamueli. Regev broke, preventing him from seeing the results of his AIM-9D launch, although Eli Zohar and navigator Yehor Gal had photographed the whole event with their bomb damage assessment camera. The kill was confirmed. Then a MiG-21 got behind Regev and opened fire. It kept on firing until the arrival of Benaya and Zohar forced him to disengage. Regev and Shamueli returned to base with a huge hole in the starboard wing of their F-4.



No 201 Sqn Kurnass 618 was the jet lost during the morning ABA mission to Elmaza on 13 October 1973. The intention had been to prevent dawn strikes on IDF forces in the Golan Heights by MiG-17s. Pilot Adi Benaya managed to nurse the damaged Kurnass away from the Damascus area, and after crossing the Syrian-Lebanese border, navigator Yair David gave him a western course to the Mediterranean, rather than south over Lebanon towards Israel. They assumed that ejection over the sea would be safer than one over Lebanon. Immediately after crossing the coast Benaya and David ejected and were rescued by a CSAR helicopter

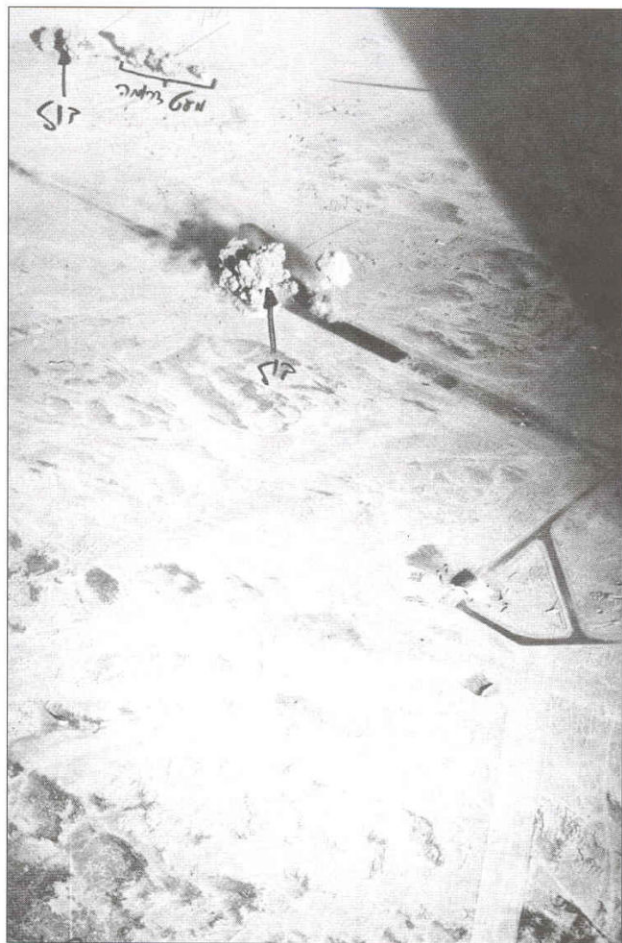
Unlike No 201 Sqn, which had evaded interceptors en route to Damascus, the No 69 Sqn formation heading for Dmierz was forced to engage MiG-17s before reaching the target. Yoram Agmon and navigator Daniel Wittmann downed one, but the mission was aborted.

The war's eighth day, 13 October, was a one of transition. The Israelis' Golan Heights offensive still occupied much of the IDF/AF until noon, but from then on the focus shifted to the Egyptian front. The five kills credited to the Kurnass force that day illustrated the transition. The first three were claimed in two morning air base attacks on Syria and an early afternoon engagement over the Golan Heights, but the day's final two kills came on the Egyptian front.

The arrival of the Iraqi expeditionary force in the Golan Heights resulted in a major clash, and although an Iraqi brigade was destroyed, the Israeli advance on Damascus was halted. Simultaneously, Syrian pleas to Egypt to re-open the Sinai front, and therefore ease pressure on them, were finally successful. But the Egyptians only launched their major offensive on 14 October after fighting on the Golan Heights had started to die down. By then Israel had already achieved many of its objectives.

No 107 Sqn flew a 'double' ABA mission on 13 October 1973, with eight aircraft splitting into two four-ship formations to attack Dmierz and Saikal. Dmierz (illustrated) was bombed by 'Buffet' section, led by Yiftach Spector and navigator Roy Manoff, while 'Bed' section, led by Israel Krieger, bombed Saikal. It was over the latter target that defending MiG-21s were engaged and Amir Nachumi achieved ace status





This combat photograph of Saikal under attack on 13 October was taken just after the base had been bombed, and moments before the combat that made Amir Nachumi an ace. It shows three impact points: 'Bed 1' Israel Krieger scores a direct hit on the far runway (top); 'Bed 2' Uzi Rozen has a near miss on the middle runway; and 'Bed 3' Amir Nachumi scores a direct hit on the nearest runway. 'Bed 4' Dubi Yoffe may have taken this photograph, as his impact point is missing

The morning of 13 October opened with what had now become routine attacks on Syrian air bases. Dmeir and Saikal were hit by No 107 Sqn, Blai and Khukhul by No 119 Sqn and Damascus International Airport and Elmaza by No 201 Sqn – No 69 Sqn was given the morning off. As usual, the defending MiG-21s were up, and No 119 Sqn was credited with a single squadron kill over Khulkhul. But it was the victory attributed to No 107 Sqn over Saikal which was of special significance. Amir Nachumi downed a MiG-21, taking his tally to five kills and making him the fifth Kurnass ace. He explained how it happened;

'We flew in two four-ship formations, splitting at a certain point, with Spector leading a four-ship on Dmeir and Krieger leading us to Saikal. I was "Bed 3" and my wingman was a very young pilot, Uzi Rozen. There were MiG-21s on a CAP, but they only managed to catch us after the bombing. I saw a MiG-21 threatening Rozen. I erroneously shouted, "2, break" so Dubi Yoffe, who was "Bed 2", broke. I then figured it would be better if I acted rather than shouted! I manoeuvred in behind

the MiG. It was actually firing at Uzi Rozen when I launched an AIM-9D from a range of 1300 m. The destruction of the MiG removed the threat, so we disengaged. It was a relatively short combat.'

The day's next three Kurnass kills came after jets had been scrambled to intercept enemy aircraft attacking IDF ground forces. In the early afternoon, No 69 Sqn's Yoram Agmon and Daniel Wittmann downed a MiG-17 over the Golan Heights. A technical malfunction forced Agmon to order his navigator to launch the AIM-9D which scored possibly the only Kurnass kill actually triggered by the navigator.

Five hours later, and 500 km away, a similar scenario yielded two more victories when two No 201 Sqn jets scrambled to intercept attacking Su-7s and escorting MiG-21s. The engagement was fought over the Lake Bitter sector, current IDF/AF CO Dani Halutz and navigator Shimon Noi downing a MiG-21 with an AIM-9D. Wingman Gil Regev and navigator Ilan Lazar followed suit, their victim being an Su-7.

THE WAR'S FINAL DAYS

As the ninth day of the war dawned, the Kurnass force had reached a watershed. Operational achievements until then had been mixed. The initial effort against air defences had been a complete failure, but other tactical missions, as well as the strategic campaign, were considered successful. Additionally, Kurnass aircrews were credited with 51 air-to-air kills – no mean feat for a force whose primary mission was not dogfighting. Yet all these achievements came at a high cost. During the war's first eight days the Kurnass force had lost 23 aircraft, with No 69 Sqn losing seven aircraft (four aircrew killed and six PoWs), No 107 Sqn three jets, No 119 three F-4s (three killed and three PoWs) and No 201 Sqn ten aircraft (four killed and nine PoWs).

The fact that only three of these aircraft had been lost in air combat was no consolation, as almost a quarter of the IDF/AF's pre-war Kurnass order of battle had been destroyed. But attrition was not just an Israeli problem. Egypt and Syria, as well as the Algerian, Iraqi and Libyan aerial expeditionary forces, had suffered severe losses too. After almost ten days of fighting, the SAM threat over the Syrian front had also receded somewhat. This was almost certainly due to missile stock depletion, rather than the result of any successful Israeli action.



Above and left

The first of 34 emergency aid ex-USAF F-4Es arrived in Israel on 14 October 1973. Allocated tail numbers prefixed 3, the highly-appreciated reinforcements were committed to combat almost immediately. The darker USAF camouflage scheme easily revealed the origin of the newcomers, which were nicknamed *Karpada* (Toad)

In fact, when it came to replacing losses and rearming, it was the Egyptians and Syrians who blinked first. As early as 9 October, a Soviet airlift to Syria was launched, closely followed the following day by similar aid for the Egyptian war machine. The intensified activity at Syrian rear bases as Soviet An-12 and An-22 transport aircraft were hastily unloaded attracted the attention of IDF planners.

A Kurnass mission to Haleb on 10 October resulted in a damaged transport, although the Israelis avoided further aggression against the Soviet airlift. Their restraint was rewarded on 14 October when the Americans launched Operation *Nickel Grass* – an airlift to Israel involving a total of 145 C-5 and 421 C-141 sorties. This was supplemented by the arrival of replacement jets to make good combat losses, including F-4E fighter-bombers drawn from operational USAF units and flown to Israel by USAF aircrews. The first eight landed at Tel-Nof on 14 October and were immediately issued to No 69 Sqn.

MANSURA AND TANTA

These reinforcements acted as a morale booster, but an even greater fillip was the failure of the Egyptian offensive in Sinai. It was a turning point in the war. For the cost of around ten tanks, three Israeli armoured divisions destroyed close to 200 of the estimated 1000 main battle tanks deployed by the Egyptians. They had failed to advance beyond the thin ten-kilometre-wide strip of land inside Sinai, east of the Suez Canal, which had been captured in the opening phase of the war. Now they were exposed to Israeli air strikes as they advanced beyond the protective shield of the ADF.

That afternoon the Kurnass force focused its efforts on Tanta air base, deep inside Egypt on the farthest side of the Nile Delta. It was

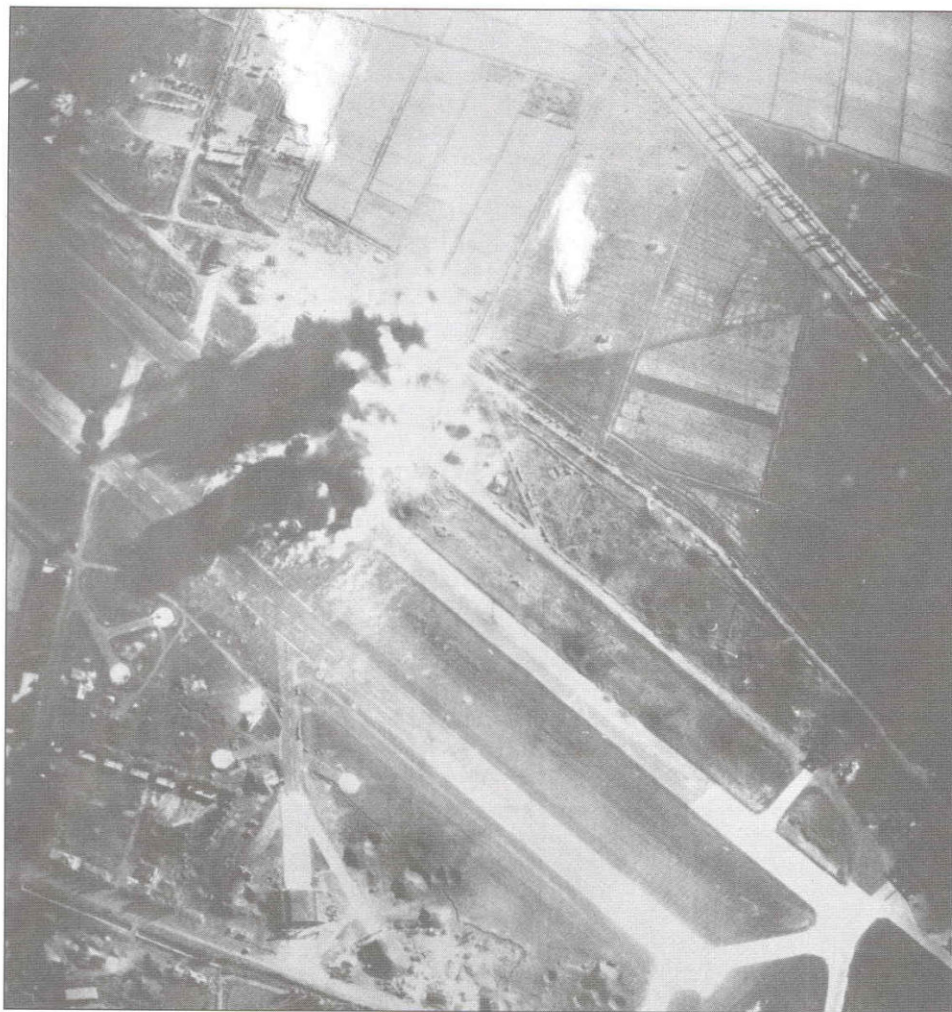
Below

No 69 Sqn Kurnass 310 'Toad' (behind the bomb trolley) displays a single kill marking. This aircraft was lost in a collision with Kurnass 305 on 29 December 1977 during a three-versus-two dissimilar air combat training (DACT) sortie with F-15s. The crew of 310 ejected but 305's were killed

Bottom

Kurnass 318 'Toad' (second from the right) also displays a single kill marking. This aircraft became 718 after being upgraded to Kurnass 2000 standard





The No 201 Sqn ABA mission to Mansura on 14 October was aimed at opening a corridor for the Nos 119 and 107 Sqn formations attacking Tanta. As expected, the MiG-21s defending their home base reacted aggressively. In the ensuing combat, the No 201 Sqn crews scored three kills but failed to prevent the interception of the No 107 Sqn aircraft

home to two squadrons of Libyan Mirage 5s, which had been operating alongside Egyptian MiG-21s. The main attack was to be mounted by Nos 107 and 119 Sqns, while No 201 Sqn was to open the way to Tanta by striking Mansura, home of the the elite EAF MiG-21 interception units.

In the end, all three Kurnass units had to fight the MiG-21s. Tanta was closed for 24 hours and the air-to-air loss-to-kill rate was 9-to-1 in the Israelis' favour. But the combat had been hard going, and many Kurnass crews had narrow escapes. No 201 Sqn pilot Eli Zohar summed it up as 'the toughest mission of my life'.

The scheduled time-over-target at Mansura was 1535 hrs for No 201 Sqn and 1540 hrs for No 119 Sqn at Tanta. The eight aircraft heading for Mansura were split into 'Crab' and 'Dog' sections. 'Crab' – the call sign of Eitan Ben-Eliyahu, (*text continues on page 61*)

COLOUR PLATES

1

Kurnass 08 of No 201 Sqn. Hatzor, 11 November 1969



2

Kurnass 04 of No 201 Sqn. Hatzor, 17 November 1969



3

Kurnass 610 of No 201 Sqn. Hatzor, 6 March 1970





4

Kurnass 36 of No 69 Sqn, Ramat David,
2 April 1970



5

Kurnass 661 of No 201 Sqn, Hatzor, 3 August 1970



6

Kurnass 673 of No 201 Sqn, Hatzor, 13 June 1972

7

Kurnass 154 of No 115 Sqn, Tel Nof, 23 June 1972



8

Kurnass 187 of No 69 Sqn, Ramat David, July 1972



9

Kurnass 183 of No 69 Sqn, Ramat David, 9 September 1972



10

Kurnass 147 of No 119 Sqn. Tel Nof, 8 January 1972



11

Kurnass 645 of No 201 Sqn. Hatzor, 8 October 1973



12

Kurnass 245 of No 69 Sqn. Ramat David, 8 October 1973



13

Kurnass 215 of No 107 Sqn, Hatzorin,
9 October 1973



14

Kurnass 640 of No 201 Sqn, Hatzor, 11 October 1973



15

Kurnass 119 of No 119 Sqn, Tel Nof, 15 October 1973



16

Kurnass 162 of No 119 Sqn, Tel Nof, 23 October 1973



17

Kurnass 194 of No 119 Sqn, Tel Nof, 9 November 1973



18

Kurnass 499 of No 119 Sqn, Tel Nof, 1978



19

Kurnass 237 of No 105 Sqn, Hatzor, 1980



20

Kurnass 225 of No 105 Sqn, Hatzor, 1985



21

Kurnass 315 of No 69 Sqn, Ramat David, 1982



22

Kurnass 317 of No 107 Sqn, Hatzorim, 1982



23

Kurnass 144 of No 119 Sqn, Tel Nof, 1984



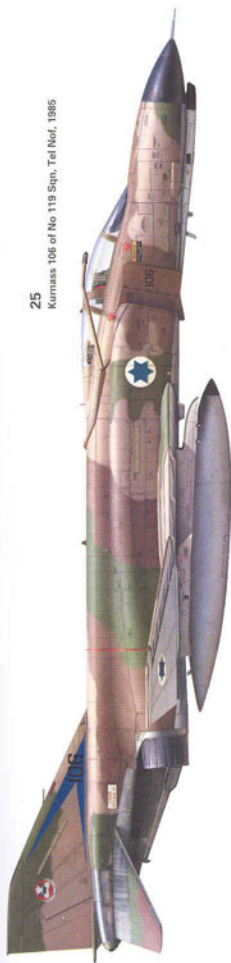
24

Kurnass 175 of No 69 Sqn, Ramat David, 1984



25

Kurnass 106 of No 119 Sqn, Tel Nof, 1985



26

Kurnass 304 as Kurnass 2000 prototype 001, Flight Test Centre, Tel Nof, July 1986



27

Kurnass 334 Super Phantom II, Flight Test Centre and IAI, Tel Nof and Lod, 1987



28

Kurnass 334 Super Phantom II 4X-JPA/Paris Airshow 229, June 1987



29

Kurnass 297, Flight Test Centre, Tel Noé, 1980s



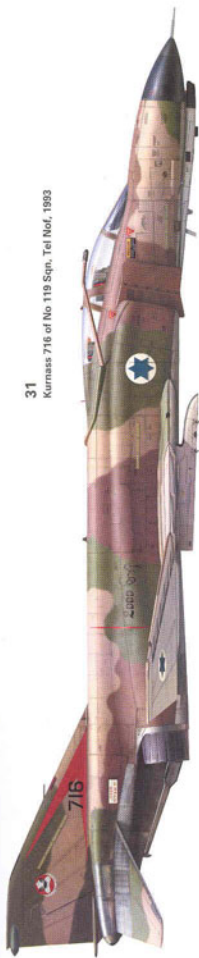
30

Kurnass 668 of No 201 Sqn, Tel Noé, April 1969



31

Kurnass 716 of No 119 Sqn, Tel Nof, 1993



32

RF-4E 485 of No 107 Sqn, Hatzerim, January 1998



33

Kurnass 635 of No 201 Sqn, Tel Nof, 2003



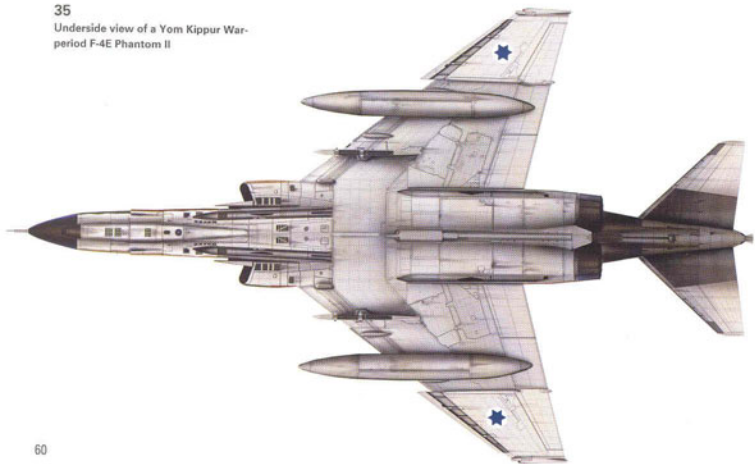
34

Top view of a Yom Kippur War-period F-4E Phantom II in standard IDF/AF three-shade camouflage



35

Underside view of a Yom Kippur War-period F-4E Phantom II



No 201 Sqn's new CO – section was to suppress air defences with cluster bomb units and then fly a CAP for the main force. That comprised the six 'Dog' crews, who were to dive-toss hardened aircraft shelters and runways. The day before, Yiftach Zemmer had ejected from his damaged Kurnass 97 and suffered a back injury. Ran Goren, who was scheduled to succeed Zemmer, was flying as an EP with No 107 Sqn, so Ben-Eliyahu assumed command. Immediately after the war Goren succeeded Spector as No 107 Sqn CO.

Five minutes behind No 201 Sqn, No 119 Sqn CO Eliezer Prigat and navigator Aharon Katz were leading six more F-4s towards Tanta. Both units successfully completed their attacks, although they left their respective target areas with MiG-21s on their tails. At Tanta, No 119 Sqn crews managed to disengage successfully. A MiG-21 which crashed when breaking hard to avoid Rafael Koren and navigator Rachamim Sopher became a squadron kill.

At Mansura, disengagement was much more difficult. Ignoring the MiG-21 on his tail, Eitan Ben-Eliyahu shot down the jet in front of him with a cannon burst. Then navigator Amiram Talmon, who was watching their 'six o'clock', shouted, 'Break, now'. Ben-Eliyahu broke hard at very low altitude, and the MiG-21 on his tail could not follow. It crashed, thus becoming another squadron kill. 'Dog 1' Eitan Peled came to the rescue of 'Dog 4' and shot down a MiG-21. Navigator Yehoar Gal recalled:

'Navigation over the Nile Delta was a challenge, even though we had an inertial navigation system. It was flat green terrain full of water, canals, electricity lines and villages that all looked the same. Eitan Peled said, "I 'owe' you a MiG kill (referring to the 12 February 1973 engagement), so if you get me to Mansura on time I'll arrange one for you". I answered that I would, but he said, "One more thing. If we shoot down a MiG you'll shave off your moustache". We arrived over Mansura on time. We knew there were MiGs there, as Eitan Ben-Eliyahu had reported shooting one down. Indeed, as we pulled-up I saw a pilot under his parachute canopy. We bombed, and during the disengagement we scattered because of the MiGs.

Displaying a kill marking below its windscreen from a combat on 13 June 1972, No 201 Sqn Kurnass 633 takes off on an operational mission during the Yom Kippur War. Eitan Peled and navigator Yehoar Gal were flying this aircraft (later re-numbered 133) when they shot down a MiG-21 over Mansura on 14 October 1973. Aviem Sella survived a crash landing in 633 in September 1976, IAI then taking more than four years to rebuild the badly damaged fighter-bomber



No 201 Sqn's Kurnass 633 is seen here on a post-Yom Kippur War reconnaissance escort mission, its tail number having had its prefix changed to 1. The aircraft still displays only a single kill marking, perhaps because nobody was in the mood to update surviving Kurnass scores

'We were flying very low and very fast – probably over 600 knots – and the high humidity over the Nile Delta caused lots of condensation from our wings. "Dog 4's" navigator was totally inexperienced, so when he noticed the condensation he reported to his pilot that they were burning! "Dog 4" screamed, "I'm on fire". We then saw a MiG chasing "Dog 4" and we called on him to break, but he didn't.'

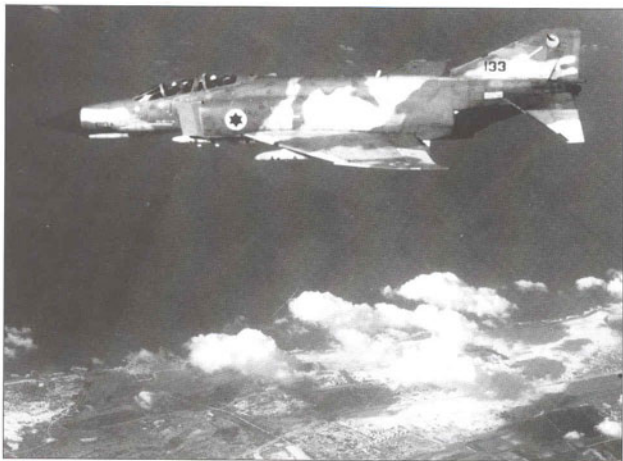
Peled and Yehoar now turned their attention to that MiG. Eitan Peled recalls:

'I launched an AAM but it didn't home on the MiG. Apparently I had forgotten to activate seeker head cooling. Only later was a modification introduced to prevent this happening.'

At that point in the engagement Peled and Yehoar's MiG was almost certainly warned of their presence by a second EAF fighter, for 'Dog 1's' target suddenly pulled up. Yehoar remembers:

'Just as he pulled up I yelled to Eitan Peled over the intercom, "He's finished!" The closing speed was terribly high, so once he pulled up and presented his silhouette to us, the range closed in no time at all. A cannon burst, an explosion and my moustache was history.'

Most No 201 Sqn Kurnass aircrews were attacked by AAMs, SAMs and cannon during the mission, with the MiG-21s proving to be as aggressive as the Egyptian flak gunners and SAM operators. One by one the F-4s managed to retreat. Soon, the discussion over the R/T was about who would land where because many crews did not have enough fuel to reach Hatzor. Eitan Peled and Guri Palter landed at El-Arish, while Eli Zohar and navigator Yitzhak Baram flew into the small



Baluza landing strip just behind the frontline. They had been the last to leave Mansura, battling with up to six MiG-21s.

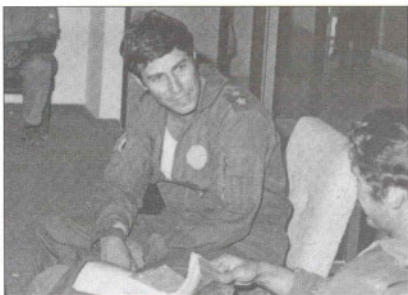
This attack had only been the prelude, for the main force in the Tanta strike comprised 12 Kurnass fighter-bombers split into 'Buffer' and 'Bed' sections. The planning had called for No 201 Sqn to draw away the Mansura MiG-21s and for No 119 Sqn to soften Tanta up for No 107 Sqn. Naftali Maimon, who was 'Bed 2' in this fateful mission with navigator Yitzhak Raz, recalled:

'It was what we called an "operation". The Kurnass force jumped on Tanta, and we were at the "tip of the spear". It was in the afternoon, and we flew west into the haze. Visibility wasn't good. We didn't follow the planned route either. We had intended to outflank Tanta and to arrive from the north-west. Our tactic was to fly really fast with afterburners and pull-up really high. Fast as we were, no one could intercept us. But there wasn't enough fuel to fly like this to Tanta on the planned route, so we rounded up the corners. We didn't outflank the base. Instead we turned south much earlier than planned, arriving at Tanta from the north-east or almost north.

'On our way in we heard the air combats over the R/T. Then we heard their discussion about which crew would land where. They had absolutely shocking fuel states – one crew reported 800 lbs, another 1500 lbs. I started to think about my own. Our configuration was three external fuel tanks and five Mk 117 750-lb bombs, with two AIM-7s and a single AIM-9D for self-defence. Just as we crossed the coast the MiGs appeared, but I didn't see them. Spector had been really aggressive in his briefing. He stated that a crew who failed to bomb would face court martial! I took him very seriously, and so did the others.

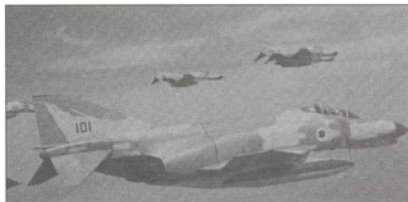
'Despite the MiGs on their tails shooting AAMs, they simply pressed on to Tanta. Luckily no one was hit, but it was a narrow escape.

'Pilots then began to ask over the R/T for permission to break. It was like an onion. Pair after pair, the six Kurnass ahead of us and the four trailing behind broke to engage the MiGs. It was crystal clear to me that we alone were pressing on towards Tanta, and that every minute we flew on was actually worth two minutes, and we would have to return alone as well.



Naftali Maimon was credited with three kills as a young Kurnass pilot, and received Israel's second highest decoration – the Distinguished Service Medal – for his actions during the ABA mission to Tanta on 14 October 1973. He commanded an A-4 Skyhawk squadron during the Lebanon War of June 1982

Naftali Maimon, with navigator Yitzhak Raz, shot down two MiG-21s on 14 October in No 107 Sqn Kurnass 101. The jet is seen here participating in the May 1973 Israeli Independence Day flypast. Uniquely, a father and son combination were present in this particular formation, as IDF/AF CO Binyamin 'Ben' Peled joined his son Yoram, who was serving with No 107 Sqn at the time



Neftali Maimon's first kill viewed through the sight of Kurnass 101 during the ABA mission to Tanta on 14 October. The right-hand frame was exposed just before the missile hit its target, while the next two indicate the result of the AIM-9D AAM's impact on the MiG-21

'We flew very low. The windscreen was covered with insects and visibility worsened. I kept on looking for the MiGs but didn't dare look behind as we were flying so low. Then I saw a MiG. I could judge by his behaviour that he'd seen us, and was targeting "Bed 1" (Israel Krieger). I shouted "break" using the wrong call sign, but Krieger understood and broke. I pushed the "panic" button to jettison everything and clean the aircraft of external stores. I then heard a boom and the aircraft started to skid and behave in abnormal fashion. For a moment I thought we'd been hit, but after we landed I realised that when I'd pushed the panic button only the stores under the left wing had been jettisoned. Those below the right wing were still there. From that moment on I'd been flying an asymmetrical aircraft which I thought was damaged.

'Without realising why and how, I found myself right behind that MiG. But it was clear there was one on my tail. I saw nothing, but I knew. Under a lot of mental pressure, I flicked the "Mama" switch and activated the AAM launch switch with my toe, but nothing happened. For three long seconds nothing happened. We later analysed the gunsight film and took times. I just didn't know what to do. The MiG was launching and firing and Krieger was shouting, "Shoot him down, hurry up!" I eased back on the throttles to avoid overtaking them, as both Krieger and the MiG were turning and reversing. I still didn't know what to do, but then I had an idea.

'There were 14 safety switches in the Kurnass and one of them must have been the faulty one. I didn't know which one, so one by one I changed the position of the switches – every switch that was on "arm" I switched to "safe", and vice versa. It was a huge intellectual effort under the circumstances, but it brought me back to my senses. I didn't launch immediately, but waited for the optimum solution. I waited until he reversed and then launched. The AIM-9D hit him in a zero-deflection angle. It wasn't a coincidence. It was cold-minded planning.

'The MiG was hit. Krieger accelerated to Mach 1.1 but I couldn't fly faster than Mach 0.9. Because of the initial break, we were heading north or north-west by then, and Krieger, who was faster than me, opened up some distance between us. During the engagement I let my





mind slip. I forgot that a MiG was almost certainly on my tail. Suddenly I saw it, but once again that second MiG came after Krieger, right in front of me! I shouted to Krieger, "Break!" He did. I had only launched with a single IR AAM because I wasn't counting the AIM-7 SARH AAMs as viable air-to-air weapons – inexperience, unawareness.

I followed the MiG, but I had no "good" missiles left. I had to use the cannon. Teamwork with my navigator was far from perfect, so we didn't lock the radar and there was no range or firing solution to feed the sight. When no radar lock was achieved, the sight was set to 300 m and I estimated the range at 700-800 m. I opened fire. It was a short burst, but it was crystal clear to me that I wouldn't hit him. Only when I was right behind him – when no deflection was needed except to compensate for the effect of gravity – did I place the pipper slightly above the MiG and squeeze the trigger. I knew my aim was good so I gave him a really long burst. The cannon rounds took about a second to cover the 800 m, then they hit the MiG. It didn't explode in a fireball but simply stopped flying in a huge-G pitch-up. I noticed a parachute and there were reports that the pilot had ejected, but in my opinion that was the braking 'chute because no pilot could eject under such a G force.

I overtook the MiG, got hit by debris and asked Krieger to escort me. I switched off my afterburner, and that was when I noticed that its only effect was to cause vibration! The aircraft didn't fly faster with it on. Disengagement took a lot of time, but finally we returned to base. I didn't feel comfortable with my approach so I made a go-around,

Operating out of Tanta air base on the western side of the Nile Delta, the two Libyan Mirage 5 squadrons were considered by IDF intelligence as operating the most capable of all Arab attack aircraft. Therefore, Tanta was the focus of attention for the Kurnass force on two crucial days – 14 October 1973 and the following day, when Israel retaliated with its own offensive

No 107 Sqn CO Yiftach Spector (standing fourth from left) flew Kurnass 122 (later 222), which accounted for five MiGs, with navigator Roy Manoff on an ABA mission to Tanta on 14 October. The individuals present in this photograph are standing, from left to right, No 107 Sqn's adjutant (unnamed), Roy Manoff, squadron technical officer (unnamed), Yiftach Spector, squadron navigator (unnamed), Daniel Shaki, Micha Oren and Yossi Ye'ari. Squatting, from left to right, are the squadron deputy technical officer (unnamed), squadron armament officer (unnamed), two technicians (both unnamed) and Yossi Yavin

flew a circuit and landed. Only after landing did I see the bombs and external fuel tank below the right wing. I was flying a really sick jet.'

Maimon received Israel's second highest decoration, the Distinguished Service Medal. Amir Nachumi, who had already been awarded the same decoration over Ophir, was credited with two kills – almost two kills, that is;

'Due to our route change, we crossed the No 119 Sqn aircraft head-on – they were on their way out and we were on our way in. We flew too close to Mansura, where there was a strong MiG CAP. I was "Buffer 5" and my wingman was Meir Most. We were intercepted by two MiG-21s. One chased Most and one came after me. We had to break, and I decided to go after the MiG which was after Most. I launched an AIM-9D from a range of 1200 m. It hit. The Egyptian pilot ejected and we passed by him, very close to his parachute. As a result of that engagement we separated.

'We had agreed upon a certain meeting point to which both of us flew alone. We had already crossed the coast at 15,000 ft when suddenly I saw a shadow overtaking me. It was an AAM, which passed very close to us but didn't explode. Right behind the AAM came the MiG-21 which had launched it.

'My fuel state was terribly low, but I had to engage him in a one-versus-one combat. I broke hard and pulled-up. He overtook me very close – perhaps 50 m – and I could see the pilot in the cockpit looking at me. He climbed to about 3000 or 4000 ft above us, and was very aggressive. He rolled over to attack again, so I pulled a ruse. At 200 knots I dropped my nose to make it appear as if I had lost all my energy. He was waiting for that moment and came in. I lifted my nose abruptly. That surprised him. He overtook me, and it was my turn to attack. I opened fire with my cannon. It was a long burst, and I used all my rounds. He didn't explode but lost all his energy, so I overtook him. I then had to concentrate on our own recovery (from the dive). We recovered very close to the water.



'When we looked back we saw a huge splash. The MiG had crashed. It was impossible to ascertain that it was as a result of my cannon burst or because he had lost control. To my deep sorrow this was a no weapon squadron kill. In my opinion it was my seventh F-4 kill, and as I later added seven F-16 kills to my tally, whenever I am asked how many aircraft I shot down, my answer is always 14. After all, that MiG-21 pilot didn't volunteer to crash into the sea'

This was navigator David Regev's fourth kill, while the fifth No 107 Sqn victory was credited to Yiftach Spector – his 12th and navigator Roy Manoff's seventh. The single aircraft lost on the return flight from Tanta fell victim to a 'friendly fire' incident involving a Nesher delta-fighter formation vectored to support the returning No 107 Sqn aircrews. The Kurnass crew ejected and were rescued after a few tense hours in the cold October waters of the Mediterranean Sea.

TANTA REVISITED

The 14 October fighting in Sinai gave the Israelis the momentum and morale boost to launch a classic indirect approach offensive the next day that would change the course of the war. Opening a corridor between the Egyptian 2nd Army in the north and the 3rd Army in the south, IDF forces fought their way to the east bank of the Suez Canal, just north of Lake Bitter in the Deversoir area. The first Israeli troops crossed the Suez Canal on the night of 15/16 October to establish a foothold on the African west bank. The Egyptian military leadership had failed to appreciate the full implications of what they had assumed was just another commando raid, albeit a daring one.

The first IDF division (143rd, commanded by Maj Gen Ariel Sharon, now Israel's Prime Minister) to cross the canal secured the bridgehead, and a second (162nd) followed during the night of 17/18 October. A third (252nd) began the crossing on 19 October. The 143rd secured the Deversoir bridgehead while the others advanced south towards the Gulf of Suez, aiming to encircle the Egyptian 3rd

Shlomo Egozy, No 107 Sqn senior deputy CO, was credited with his eighth Kurnass kill on 14 October 1973 while flying No 230. He became Israel's highest-scoring F-4 ace with this success. Seen here whilst serving with No 69 Sqn in 1984, Kurnass 230 (*Peace Echo IV F-4E Block 51 71-1787*) was photographed at the 'last chance' point prior to flying an operational mission. Displaying three kill markings, the aircraft was later upgraded to Kurnass 2000 standard and renumbered 630





The Kurnass strategic campaign resulted in a number of aerial victories after the bombers were intercepted by defending MiG-21s. Pictured here is the Tartus oil storage facility in Syria, which was bombed by No 201 Sqn on the morning of 15 October 1973. The mission saw a rare AIM-7 kill credited to pilot Ben-Ami Peri and navigator Ilan Lazar

Army. The implications of the IDF offensive were huge, but not just to the conduct of the ground war. As early as the morning of 16 October, when a reserve paratroop brigade (247th) and an armoured regiment (421st) set foot on the west bank, tanks destroyed an Egyptian ADF SAM battery.

As the Israeli tanks created havoc among Egyptian rear forces, the air superiority battle was also being won. Having destroyed Egyptian air defence assets, the IDF finally handed-over to the IDF/AF the freedom of operation it had long been seeking. Although only a portion of the Egyptian ADF had been destroyed, the remaining elements amounted to little more than a collection of defensive assets, rather than a coherent network covering the whole front.

The Kurnass force's share in the new Israeli effort focused on 15 October attacks to expel the EAF from the front line area. Strategic missions against Syria also continued, and during a morning operation against an oil storage facility at Tartus, No 201 Sqn's Ben-Ami Peri and Ilan Lazar shot down an SAF MiG-21 with an AIM-7

BAI missions in Sinai and limited efforts against air defences around the IDF offensive were also flown that day, but the Kurnass force's primary focus was on Egyptian air bases. Kotamiya, Shubrakit and Tanta were all targeted, with time-over-target for No 119 Sqn being 1245 hrs, closely followed by No 201 Sqn. Both units were engaged in air combat, while No 107 Sqn managed to bomb Tanta and evade the lurking MiGs.

Asher Snir, with navigator Aharon Katz, led the No 119 Sqn formation. It was preceded by the SEAD and CAP section, which was to arrive over Tanta from different directions to drop cluster bombs and then seek MiGs. Trailing Snir's flight was 'Locksmith' section, led by Omri Afek. A few minutes before the main No 119 Sqn force arrived at the designated pop-up point, the big fighter-bombers were engaged by SA-2s and 'Locksmith 2' was shot down.

The SEAD and CAP section had not been wholly successful, and the surviving Kurnass crews had to fight their way out of Tanta. Snir shot



No 107 Sqn groundcrew prepare Kurnass 122 for a mission during the Yom Kippur War. Note the absence of detonators in the cluster-bomb units, which were only installed at the last moment. The housing for the battle damage assessment camera can be seen below the wing root



down a MiG-21 with a burst of cannon fire, the MiG-21 pilot ejecting to signal Snir's 13th kill, and his first while flying the Kurnass. An AA-2 then hit Omri Afek's Kurnass, but he managed to nurse the jet back to Tel Nof and complete a successful cable-arrested landing.

Minutes later, the No 201 Sqn Kurnass force appeared over Tanta. The two Eitans were again leading the attack, with Ben-Eliyahu in the leading 'Crab' section and Peled trailing with 'Dog'. In the ensuing combat, a persistent MiG-21 pilot chased Peled, who was flying with navigator Yitzhak Baram. Pulling up to evade the MiG, Peled lost control at about 12,500 ft. It was only at 1500 ft, inverted and flying at just 150 knots that he managed to regain control. The pursuing MiG was not so lucky. It crashed just as 'Dog 2' – Gil Regev with navigator Eitan Shamueli – finally heard their missile's tone.

NO LOSSES

For only the second time in 11 days of war, 16 October saw not a single Kurnass lost – this had also been the case on the 5th. This was an achievement greatly appreciated by the crews, especially on a day

Asher Snir and navigator Aharon Katz shot down a MiG-21 during the Tanta ABA mission on 15 October 1973 while flying No 119 Sqn flagship Kurnass 119, which is seen here in a pre-Yom Kippur War mixed formation of two aircraft from Nos 119 and 201 Sqns. This four-ship also includes Kurnass 645, which was lost on 7 October

Taking advantage of the Israeli army's offensive across the Suez Canal, the IDF/AF re-launched its SEAD effort against the Egyptian ADF. But instead of a full-scale assault, the preferred tactic was to attack isolated portions of the network. The Kantara to Port Said area in the northern sector of the Suez Canal was attacked on 16 October 1973, when a No 107 Sqn Kurnass captured this view of the SA-2 battery at the former Gamil airfield west of Port Said. The surrounding AAA positions defending the SAM battery, as well as numerous bomb craters, can be identified. No losses were sustained by the Kurnass force in this first limited SEAD action, but three failed to return from similar missions over the next two days. No 201 Sqn lost 'Lion 2' (Gad Samok and Baruch Golan in Kurnass 620) on 17 October during a SA-3 SEAD mission, 'Tiger 2' (Guri Palter and Yitzhak Baram in Kurnass 616) on a SEAD mission on 18 October and 'Young Lion 2' (Doron Shalev and Yosef Lev-Ari in Kurnass 635) also on a SEAD mission on 18 October



No 69 Sqn Kurnass 209 (*Peace Echo IV* F-4E Block 50 71-1396) displays a single kill marking in 1985. Interestingly, Agmon and Wittmann were flying Kurnass 09 on the 16 October 1973 mission that saw them credited with a MiG-21 kill, as well as three days earlier when they shot down a MiG-17

when there was a substantial effort made against Egyptian air defences in the Port Said sector. The strategic bombing campaign also continued against Syria, resulting in more air combat. The No 69 Sqn formation which bombed the tank repair workshop at Harsata was intercepted on its way home, two kills being credited to two of the escorting Kurnass crews – Yoram Agmon, with navigator Daniel Wittmann, and Gideon Yahalom with Chaim Rubinstein. Agmon had become the only No 69 Sqn pilot to 'make ace' while flying the F-4, although two of his six kills had been achieved in the Mirage III.



Further strikes continued on the 17th, a No 119 Sqn formation flying a CAP mission deep into Syria to the Tartus area to protect No 69 Sqn crews attacking three major bridges north-east of Latakia. The objective was to disrupt the flow of supplies from Syrian ports to the Golan Heights.

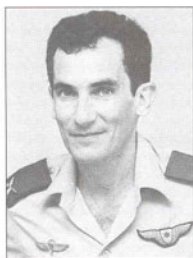
In two separate engagements, No 119 Sqn shot down two MiG-21s. In the first, Moshe Melnik and navigator Lior Elazar shot a fighter down with an AIM-9D after two misses by AIM-7s. On the return leg of the mission, the formation was vectored to engage further MiGs. In this second combat, both Asher Snir, with Chaim Katz, and Melnik and Elazar hit the same MiG-21, Snir with an AIM-9D and Melnik with cannon fire. The two crews shared the kill – the first shared victory for Israeli Kurnass flyers. It was also a first shared kill for Snir, whose personal score was now elevated to 13.5 victories, while Melnik, with 4.5 kills, was now just half a victory away from being an ace.

Day 13 was the first to pass without a single Kurnass kill. Building upon the success of the ground forces west of the Suez Canal, F-4 crews again went after air bases as a top priority. A No 119 Sqn mission to Tsalchiya was intended to prevent locally-based MiG-21 interceptors from interfering with the Nos 69 and 201 Sqn attacks on the Egyptian air defence force's Kantara site. Two crews were lost, and the following day direct confrontation with the Egyptian ADF was avoided, but 'Fist' patrols were flown continuously.

The Israeli pressure on the Egyptian ADF, and to a lesser extent on Syrian sites, resulted in increased Arab aerial activity. The objective of these sorties was to compensate for the lack of direct air support, and to relieve the threat being posed to troops on the ground by advancing Israeli tanks. However, the main beneficiaries were the Israeli delta-fighter pilots, who suddenly had a sky full of targets!

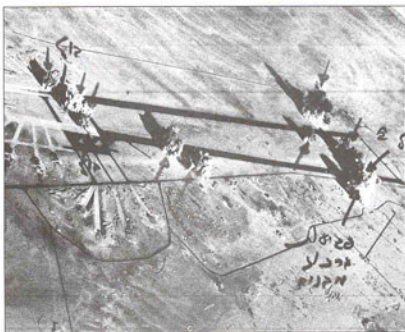
Kurnass crews also exploited the emerging opportunities by scoring three kills over the frontline on 19 October. At noon a No 69 Sqn CAP was vectored to intercept MiG-17s over Kuneitra. Yitzhak Gat and navigator Yitzhak Katz shot down one of the SAF jets, as Gat recalls:

'Our mission was to escort US airlift aircraft. When we had completed our tasking and we still had plenty of fuel left, so we were assigned to a CAP. Suddenly, GCI warned us that a four-ship MiG-17 formation had popped up to attack. I flew over to where they had been detected – it wasn't far, and my navigator was the first to see them. They had just completed their attack. I turned through 270 degrees in order to get right behind them until they levelled their wings and flew east. I got organised and launched a single



By the time Asher Snir was credited with his last aerial victory (a shared kill on 17 October 1973), taking his personal score to 13.5, he was the highest scoring Israeli ace. At that time, the only fighter pilots to surpass his achievement were credited with five kills (Giora Epstein, whose eventual score was 17) and 11.5 (Abraham Salmon, whose final score was 14.5). Both were delta-fighter pilots

No 107 Sqn returned to Kotamiya on an ABA mission on 17 October



AIM-9D, which homed. A kill. We were now over Syrian territory, and right in front of us was an extraordinary AAA firewall, so we turned back.'

A similar scenario 500 km away resulted in two Su-7 kills late that afternoon when a major Egyptian air raid targeted the Israeli bridgehead at Deversoir. A No 201 Sqn four-ship formation, together with delta-fighters, engaged enemy aircraft. During the course of the battle there was an unusual incident which not only saved a Kurnass aircrew, but also prevented others from scoring air-to-air kills. Delta-fighter pilot Giora Epstein (Israel's leading ace with 17 kills) noticed an Su-20 right behind Kurnass 'Tiger 3'. He did not know the formation's call sign, so he just yelled over the R/T, 'Phantoms, break!'

Epstein's aim had been to warn one particular crew but, as could have been expected, all of those involved broke. A number of them lost the chance of kills. Kurnass crews immediately spread the rumour that whenever Giora Epstein arrived at the scene of an air combat he shouted, 'Everybody, break!' so that he could shoot the MiGs down!

Roni Holdai, with navigator Itzhak Amitay, flying as 'Tiger 1' then noticed a pair of Su-7s. Both were swiftly shot down, one by 'Tiger 1' and the other by Eli Zohar and navigator Beni Kiryati in 'Tiger 2'. Amitay recalled:

'After the Egyptians recognised the importance of the Deversoir bridgehead, a lot of aircraft attacked the area. We were teamed with Epstein, and GCI said the Egyptians were bombing our ground forces. GCI vectored us in (west) and out (east) three times. We flew really fast at about 5000 ft so as to avoid one of the densest concentrations of AAA I have ever seen – and I've seen quite a lot in my career. Radar was not effective at such low altitude, so we visually scanned the sky for Egyptian aircraft. Then the two pairs split. Epstein and his delta-fighters covered a sector south of us. The third time we crossed the Suez Canal from west to east we saw them on our left-hand side.

'There were two Su-7s, which had just completed their attack, flying west. Holdai and I immediately launched an AIM-9D but it missed. We then heard Zohar and Kiryati report, "We shot one down". I saw two parachutes on my left-hand side and I heard Epstein reporting that he too had scored. We continued to chase our Sukhoi and launched a second AIM-9D at a relatively high off-boresight angle. The AAM homed just fine, but there was definitely no direct hit. We then noticed some sort of an explosion on the ground, but we weren't sure. When we returned we reported that we might have shot down an Su-7, and the kill was confirmed by our intelligence.'

Amitay had become the sixth crew member, and the third navigator, to become an ace in the Kurnass.

— FIGHTING ON MOUNT HERMON —

There were no kills for the Kurnass crews on the war's 15th day, 20 October, but two of the big fighter-bombers were lost to SAMs, including the MiG-killing No 142. Flying as No 119 Sqn's 'Doctor 1' were Aharon Sagi and navigator Moshe Bartov. They were shot down in the afternoon while providing close air support for ground troops west of the Suez Canal.

With the Israeli offensive on the Egyptian front on the brink of achieving its objectives, the Egyptian 3rd Army encircled and Cairo now threatened, both sides were coming under international pressure to stop the fighting. On 21 October the Israeli army launched an operation to capture a Syrian observation post.

During the preceding eight days the Syrian front had been relatively static, as the centre of gravity had shifted to the Egyptian front. Israel had regained control of the Golan Heights and was now threatening Damascus, but the Syrians had so far held on to one of their territorial gains. The Mount Hermon strong point had been overrun in a helicopter-borne commando assault on 6 October, and a counterattack by an Israeli infantry brigade had been repelled with heavy losses.

Overlooking the entire Golan Heights, as well as far into Israel, Lebanon and Syria, the Mount Hermon observation post was the only territory held by Israel before 6 October that was now in Syrian hands. It duly became the target of a second IDF attack. This time the tactic of envelopment was used, and Operation *Kinoach* (Dessert) was launched. Troop-carrying helicopters closed in on Mount Hermon from the north while an infantry brigade climbed up to the objective from the south.

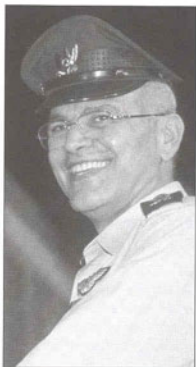
The offensive was successful, and Mount Hermon was back in Israeli control by late that evening. The action also resulted in intensified air activity over the area. A major combat in the late afternoon involved both Nos 119 and 201 Sqns, and each unit was credited with two kills at the cost of one Kurnass.

First to engage were two No 119 Sqn jets, and both crews were credited with the destruction of a MiG-21 apiece. Israeli GCI interception procedure was clearly superior in that engagement, as the Kurnass pair achieved an AAM launch position behind the Syrian MiG-21s, which were still cruising with external fuel tanks, unaware of the threat. A ballistic AIM-9D alerted the Syrian pilots to the F-4s' presence, and they immediately jettisoned their fuel tanks, lit afterburners and turned to face their attackers. The leading Kurnass crew of Nachom Merchavi and navigator Mordechai Ilani swiftly shot one of the MiGs down with a second AIM-9D, while Daniel Guri and navigator Zvi Binyamini did the same, only with cannon. A solitary Syrian pilot was seen to eject.

Minutes later, a No 201 Sqn pair also engaged Syrian MiGs in the Mount Hermon sector. Two 'no weapon' kills were credited to the unit, both MiGs having been engaged by Eitan Peled and navigator Yehor Gal. However, EP pilot Ithamar Barnea and EP navigator Gil Haran, who were flying on the leader's wing, were shot down. Haran was killed and Barnea went into captivity until 1 June 1974. It was not only the war's fifth, and last, Kurnass loss in air combat – including the 14 October 'friendly-fire' incident – but also the last to any cause.

A total of 32 Kurnass fighter-bombers had been lost (nine by No 69 Sqn, four by No 107 Sqn, five by No 119 Sqn and 14 by No 201 Sqn). The human cost had been heavy too, with 17 Kurnass aircrew killed in action and a further 24 held as PoWs in Egypt (nine remained in captivity until November 1973), in Syria (13 held until June 1974) and in Lebanon (two aircrews).

Dani Halotz was serving as a reserve pilot with No 201 Sqn when he was credited with a double kill on 23 October 1973. He had graduated from fighter school class 56 in July 1968 together with future Kurnass ace Ben-Ami Perl, and flew the Kurnass from November 1969. He was discharged in August 1973, having completed the then mandatory five years of service from graduation. War changed the course of his career twice, for after the Yom Kippur War, Halotz returned to active service until discharged again in 1978, only to return after the 1982 Lebanon War. He commanded No 107 Sqn between 1984 and 1986, and after taking charge of the operational aspects of the IAI Lavi project, he was promoted to Head of the Weapon Systems department in 1988. In 1991 Halotz assumed command of Hatzor air base, before returning to the IDF/AF Staff as Head of Air Group from 1993 to 1995 and then CoS between 1995 and 1998. He then moved to IDF GHQ as Assistant Head of Operations and then Head of Operations. Having succeeded Eitan Ben-Eliyahu as IDF/AF CO on 4 April 2000, Halotz is expected to become Deputy IDF CoS in 2004 – the third IDF/AF commander to assume that position after Ezer Weizman and David Ivry. He may well be the first airman to become IDF CoS



The change of fortunes on the battlefield resulted in intensified diplomatic efforts to end hostilities. On 22 October UN Resolution 338 called for an immediate cease-fire from 1900 hrs local time that day. Fighting continued beyond the deadline, however, although another UN resolution – 339 – coupled with massive US and Soviet diplomatic pressure on both sides, finally resulted in a cease-fire. It took effect at 1200 hrs local time on 24 October, by which point the Egyptian 3rd Army had been completely encircled and Israeli forces were only 40 km from Damascus and 100 km from Cairo.

The continued fighting placed a heavy burden on the Kurnass force during the last two days of the conflict. Operations were intensified to deliver the maximum possible tonnage of bombs on designated targets. The primary missions flown on 22 October were ground attack and SEAD along the Egyptian front, and the following day saw the 3rd Army pounded by repeated air strikes in order to further soften resistance. The last strategic mission to Syria came on 23 October, and resulted in the first of three successful Kurnass air-to-air engagements that day. They were to be the last of the war for the F-4 force.

An attack on the Khan El-Ayish fuel storage facility in Syria saw No 201 Sqn's 'Crab' section (Eitan Ben-Eliyahu) sortied as the bombing force and 'Tiger' section (Roni Holdai) providing protection. A Mirage III four-ship formation trailed the fighter-bombers, with two further pairs later joining the combat. At the designated pop-up point, 'Tiger' section was to draw the MiG-21 CAP away from 'Crab'. The ruse worked, with 'Crab' section bombing and disengaging safely without even observing the MiGs which intercepted 'Tiger'. The delta-fighters weighed in, and once the magnitude of the combat was fully appreciated, a second Mirage III four-ship formation was vectored to engage.

Tiger section leader Roni Holdai, with navigator Yoram Rotem, engaged a MiG-21 in a scissors until the latter crashed. Designated a 'no weapon' kill, Holdai and Rotem were still given credit for the victory, thus further emphasising the anomalous nature of such incidents. Meanwhile, 'Tiger 3' Dani Halotz, with navigator Yehoar Gal, was doing well – so well that two kills were scored. Gal recalled:

'Just as we pulled-up, we saw jettisoned MiG fuel tanks drifting in the air. We hadn't yet seen the MiGs, so we turned until we did. In such a high-G turn, energy is depleted really fast. We discussed such a situation a lot, and the solution was to ease the turn, level wings, accelerate out of the combat area and return with a higher energy state to give a definite edge. However, there was a difference between training and combat. Under the stress of combat it's difficult to perform in an optimal manner.

'I had the situational awareness to tell Halotz, "Let's ease out of the combat a bit". It was lucky that I was flying with Halotz. Another pilot might have ignored me, or even told me to shut up. But he levelled the wings, accelerated and returned to the combat in a higher energy state. Just as we did so we noticed Chaim Rotem ("Tiger 4") chasing a MiG. He was firing but not hitting him. Halotz asked Rotem, "Will you step aside please?" Just as he did, we launched an AIM-9D and shot the MiG down. The moment Rotem moved aside,



I knew that we would get that MiG, so I searched hard for the others and finally saw one on its own.

'As Halotz finished the kill, I told him, "There's a MiG disengaging east. Turn hard east". I locked the radar, but noticed we weren't in the appropriate weapon system. I told Halotz and he switched from heat radar to radar. We launched an AIM-7 at a range of more than 2000 m. It was a huge missile, with a huge smoke trail, but we shouted over the intercom, "What's this crazy missile homing on?" The AIM-7 wasn't a tail-chase missile but a collision course weapon, aiming at a certain point where the trajectories of missile and target would collide. By the time the missile exploded and shot the MiG down, we were all alone, as we had had to illuminate the target with our radar throughout the missile's flight.'

Completing a successful engagement, Yigal Stavi and navigator Eitan Shamueli shot down a MiG-21 with an AIM-9D. The MiG-21 pilot was seen to eject, as was the one downed by Halotz's AIM-7.

Roughly four hours later, No 107 Sqn's 'Flowerpot' section engaged MiG-21s over Ismailiya, and the leader downed a MiG-21 with an AIM-9D. Another hour later, and slightly to the south over Lake Bitter, the honour of fighting the war's final successful Kurnass air combat fell to No 119 Sqn. Gideon Sheffer, with navigator David Bankir, shot down a MiG-21 with an AIM-9D, as did Moshe Melnik and navigator Chaim Katz.

Melnik's kill made him the seventh Israeli to become an ace on the type, having achieved his first 5.5 kills in four engagements in little more than a month. Over the same time frame, between 13 September and 23 October 1973, navigator Chaim Katz was also involved in four successful engagements but his personal score was 3.5 kills.

Photographed on display during a base open day, Kurnass 165 is seen here in a rather unorthodox configuration with four AIM-7 AAMs, six rocket pods on two triple ejector racks under the wings and an SUU-23 cannon pod beneath the fuselage. Gideon Sheffer and navigator David Bankir used this aircraft to shoot down a MiG-21 on 23 October 1973 in what turned out to be the last successful Kurnass air combat of the Yom Kippur War

ROUNDING UP THE SCORE



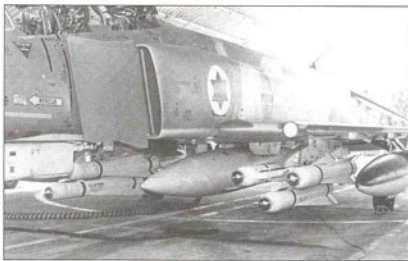
No 107 Sqn's Kurnass 110 performs a cable arrest demonstration in July 1973

The impact of the Yom Kippur War was tremendous. Among the sacrifices and successes, the IDF/AF's failure to suppress enemy air defences was the single most important issue to be addressed, and fast. Not only had it completely failed to achieve air superiority over frontline troops, but it had been forced to rely on ground forces to destroy Egyptian air defence assets. While the Egyptian and Syrian air forces were overshadowed by ground-based assets in the struggle for air superiority over the frontline, the IDF/AF could not regain the aerial superiority initiative without the support of ground forces. If the lessons from the Yom Kippur War could be summed in just a few words they would be communication, electronic warfare, intelligence and precision.

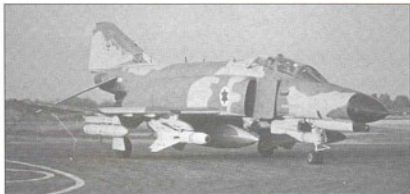
Technology was the key to swinging the pendulum of air warfare away from ground-based air defences and back in favour of the combat aircraft. The Israeli Kurnass force was to be a major beneficiary in the new developments. Innovative technologies revitalised the aircraft as a platform for suppression of enemy air defence (SEAD) missions. It was to demonstrate its effectiveness as a SAM killer in June 1982 over Lebanon.

The F-4's air-to-air combat role was to remain a secondary one until the late 1970s, not because it was inferior to the IDF/AF's main interceptors (the delta-fighters), but because of its superiority in air-to-ground missions. Yet the air-to-air record of the Kurnass by the end of

The TV-guided AGM-65 air-to-surface missile was supplied to Israel during the closing stages of the Yom Kippur War, and the weapon made its operational debut on 24 October 1973 when No 69 Sqn attacked the Egyptian 3rd Army. Having a relatively short range and small warhead, the weapon was better suited to combat air support than SEAD. Its operational deployment with the Kurnass force was, as a result, rather limited



No 119 Sqn Kurnass 193 indicates the transformation from 'bomb truck' to precision strike platform experienced by the force since this *Peace Echo* example was first operated as No 201 Sqn's Kurnass 693. The AGM-62 Walleye electro-optical guided 'glide' bomb was succeeded by the Rafael electro-optical guided weapons used in the June 1982 Lebanon War



A No 69 Sqn Kurnass section, armed with Rafael electro-optical 'glide' bombs, pause at the 'last chance' point prior to flying an operational mission. Kurnass 210 is allegedly credited with three MiG kills

Another No 69 Sqn Kurnass armed with Rafael 'glide' bombs. This particular aircraft was transferred from USAF stocks as an attrition replacement after the Yom Kippur War as part of Operation *Nickel Grass*, and was not upgraded to Kurnass 2000 standard

the Yom Kippur War was impressive. Before the campaign, the Kurnass force had been credited with 25 kills at the cost of one aircraft. During the war the kill to loss ratio was 85-to-5, or 17-to-1. If the 14 October 1973 'friendly-fire' loss is eliminated, the ratio becomes 21-to-1. The dedicated air-to-air delta-fighters scored 211 kills during the war for 11 losses, all in air combat missions. Their kill-to-loss ratio was therefore 19-to-1, which was comparable to that of the Kurnass.

The Kurnass crews' achievement is highlighted by the fact that in many air combats, bomb-laden aircraft were intercepted by MiG-21s. For the delta-fighters, the opening scenario of most air combats was exactly the opposite – unencumbered fighters intercepting bomb-laden Arab aircraft. In light of this analysis, the question posed earlier in this volume can be repeated – what would have been the score of former *Mirage III* aces Asher Snir and Yiftach Spector if they had been given





Kurnass 101 test-launches a red-painted Rafael Python 3 AAM. The Python 3 entered service with No 69 Sqn in 1978, succeeding the AIM-9D as the preferred close-range air-to-air missile. The F-15's service introduction two years earlier had resulted in the AIM-7's progressive removal from the list of Kurnass weapon options

the same air combat opportunities as their delta-fighter colleagues during the Yom Kippur War?

Despite its aerial success, the F-4's air-to-air role became of secondary importance when the F-15 entered IDF/AF service in 1976, followed by the F-16 in 1980. And this was not just because of the Phantom II's air-to-ground capability. The F-4's air combat performance was no longer on a par with that of the new generation American fighters. Gradually the Kurnass force switched from multi-role to attack missions only. It was during this process, between December 1973 and June 1982, that the Kurnass community was to be credited with its final 6.5 air-to-air kills.

YOM KIPPUR WAR AFTERSHOCK

Tension along Israel's borders with Egypt and Syria remained high after the Yom Kippur War. Only on 18 January 1974 was an agreement signed at the Cairo-Suez Highway Kilometre 101 point to separate Egyptian and Israeli forces. It was not until 31 May in Geneva that a similar agreement was sealed with Syria. Until Israeli forces retreated under the terms of these agreements, with UN troops interposed between the opposing armies, that friction, often leading to skirmishes and even a air combat, would not die down. The Kurnass squadrons participated in two successful engagements, one on each front.

On 6 December 1973 a mixed four-ship formation engaged a flight of MiG-21s over the Gulf of Suez. In this case the aircraft were

Kurnass 183 displays two kill markings forward of the cockpit and a recently-applied number on its air intake boundary layer splitter plate. The latter was applied after the accident to No 139 on 22 January 1984 when it became apparent that the crew had taken off on a training sortie in the wrong aircraft





In this July 1974 photograph No 107 Sqn's storeless Kurnass 253 exhibits one kill marking

North Korean. During the Arab build-up to the war, Algeria had committed MiG-17, MiG-21 and Su-7 units to the Egyptian front and a MiG-21 unit to the Syrian. Iraq deployed two Hunter squadrons to Egypt and four units (one of MiG-17, two of MiG-21s and two of Su-7s) to Syria. Libya committed two Mirage squadrons to the Egyptian war effort, while Saudi Arabia had hurriedly deployed nine Bell 205 helicopters to Luxor, in Egypt, on 15 October 1973 to make up for the heavy Egyptian helicopter losses. Morocco promised a squadron of F-5s, but these proved to be unavailable for deployment to Egypt after their pilots were arrested following a failed coup attempt. The only non-Arab contribution to the Egyptian war machine came from North Korea in the form of a MiG-21 unit based at Bir Arida.

The Kurnass formation that engaged the MiGs on 6 December had actually started as two pairs on a CAP, grouped together by GCI for a combined patrol with a No 69 Sqn pair leading F-4s from No 119 Sqn. When the crews engaged, the leading section fought a single MiG-21 – it is not clear where the other three were at that stage. The No 119 Sqn section was waiting above the combat. The single MiG-21 fought well, but was eventually hit by missiles launched by both Kurnass aircrews. The MiG emerged from the explosions smoking and losing altitude, but was not seen to crash. Intelligence reported that the pilot ejected, confirming a kill that was initially shared by the two No 69 Sqn crews. Later, however, it was credited to Yiftach Shadmi and navigator Meir Gur.

Meanwhile, No 119 Sqn's Aharon Sagi, with navigator Chaim Katz, fired a missile at another MiG-21. They could not wait to observe the results, and it remained a probable kill for nearly six years until an exchange of stories between Egyptian and Israeli officers confirmed the jet's demise. The North Korean MiG took navigator Chaim Katz's score to 4.5 victories.

Just as the 6 December 1973 air combat had resulted in two Kurnass kills prior to the separation agreement on the Egyptian-Israeli border, so did a 29 April 1974 engagement on the Israeli-Syrian border.



Photographed in 1982, No 69 Sqn's Kurnass 225 uniquely displays both MiG kill and SAM kill markings

As spring melted the snow on the Mount Hermon ridge, fighting erupted again as Israeli and Syrian troops struggled for control of the inhospitable peaks. Overhead, a multi-aircraft battle involving delta-fighters and a No 69 Sqn four-ship formation gave Yoram Agmon and navigator Meir Gur the opportunity to shoot down a Syrian MiG-21. So too did Ze'ev Raz and navigator Abraham Baruch.

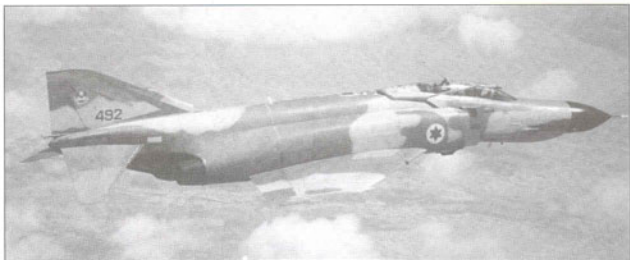
FIGHTING OVER LEBANON

Peace between Egypt and Israel triggered intensified operations over the Israeli-Lebanese border as Syria attempted to fill the vacuum of Arab leadership in the fighting against Israel. Confronting Israel on the Golan Heights was considered too risky by the Syrian leadership. An indirect approach was selected instead through the sponsorship of Palestinian terrorist organisations operating against Israel from Lebanon, which became a Syrian puppet state after 1976.

In a series of clashes over Lebanon between June 1979 and May 1982, Israeli jets shot down 20 Syrian fighters and helicopters. The share attributed to the Kurnass was just half-a-kill. Introduction of the Rafael Python 3 missile improved the Kurnass force's air-to-air

No 119 Sqn's Kurnass 686 (formerly No 286, which was then upgraded to Kurnass 2000 standard) and RF-4E(S) 492 prepare to break away for the benefit of the camera. The latter aircraft was flown by Ran Granot and navigator Daniel Grossman on the 3 January 1982 Iraqi MiG-21 squadron kill mission





A starboard side view of No 119 Sqn's RF-4E(S) 492 in flight. Note the jet's bolt-on refuelling probe

No 119 Sqn's RF-4E(S) 498 was the second reconnaissance Phantom II involved in the 3 January 1982 Iraqi MiG-21 squadron kill mission. It was flown on this memorable sortie by unit CO Gideon Sheffer, with navigator Yuval Naveh. Sheffer, who commanded No 119 Sqn between 1980 and 1983, retired from the IDF after serving as Chief of Personnel Branch, GHQ, from 31 August 1995 to 10 September 1998

competence, but the big fighter-bombers were simply no match for the F-15s and F-16s. The main opponent, however, was still Syrian MiG-21s. Most air combats over Lebanon resulted from Syrian fighters attempting to intercept Israeli aircraft bombing Palestine Liberation Organisation (PLO) targets, and being in turn engaged by defending IDF/AF CAPs.

Israeli fighter units took turns in flying highly sought after CAP assignments in an effort to spread operational experience and to equalise, as far as possible, the chances of engaging enemy aircraft. Fighters now considered inferior like the Mirage III, IAI Kfir and the Kurnass also participated in these CAPs, but in mixed formations with F-15s leading. In the same way that Mirage III pilots and Kurnass aircrews had flown mixed formations a decade earlier, now the F-15's superior radar performance was being exploited.

An engagement on the last day of 1980 involved a mixed CAP formation of F-15s leading a pair of No 119 Sqn Kurnass. Two kills were scored, one of which was a clear F-15 victory and the other a shared victory between an Eagle pilot and the Kurnass crew of Ran Granot and navigator Zvi Erlich. Between them, they launched at least five missiles at a single MiG-21.





Escalation of the conflict in Lebanon led to war in June 1982. Six months earlier an extraordinary Iraqi MiG-21 kill had been credited to No 119 Sqn RF-4E crew Gideon Sheffer and navigator Yuval Naveh. The nature of aerial reconnaissance is such that maintaining a low profile is essential to a successful operation – something which the Israeli RF-4 reconnaissance community certainly managed to do. One bizarre exception occurred on 3 January 1982.

During a reconnaissance mission over Iraq, a MiG-21 attempted to intercept a pair of RF-4s at low altitude after they had successfully completed their high level photo run. Quickly analysing the situation, Sheffer correctly deduced that the MiG-21 was flying with full afterburner in clean configuration, and had probably been doing so since being scrambled from its base. In other words, its time was running out. The Phantom IIs had only to engage the MiG-21 for a few minutes to ensure its destruction without firing a single shot. Moreover, the MiG was armed with tail-chase missiles, while

Air-to-air kill markings painted on the noses of Kurnass fighter-bombers became a rarity as the fleet focused on air-to-ground missions. Such markings progressively disappeared as the aircraft were repainted, except for those applied during the 1982 Lebanon War to denote SAM kills. All vanished during the Kurnass 2000 upgrade programme launched in 1989 and completed in 1994. In an attempt to strengthen the bond between IDF/AF service personnel and their hardware, air-to-air kill markings were reapplied to surviving Kurnass MiG killers in 2002, including No 718. Originally a *Nickel Grass* delivery, No 318 became 718 after Kurnass 2000

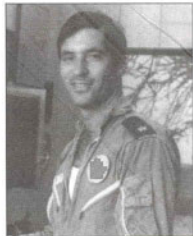
The need for stand-off precision strike capability was the primary lesson applied to the Kurnass force from the Yom Kippur War, together with the provision of a host of complementary communication, electronic warfare and intelligence technologies. The GBU-15 electro-optical guided weapon enabled Kurnass aircrews to make precision strikes on high value targets, the weapon being extensively used during the June 1982 Lebanon War. Here, No 105 Sqn Kurnass 203 carries two GBU-15s, together with the weapon's data link pod under its right wing



As the Kurnass was a bomber rather than a fighter, its only recognisable operational achievements, and that of its crews, were denoted by air-to-air kill markings and certificates. The introduction of precision-guided munitions finally resulted in the attribution of air-to-ground kills, as demonstrated by Kurnass 317 which displays markings signifying SAM batteries destroyed in June 1982



Ben-Ami Peri graduated from fighter school class 56 in July 1968 with future MiG killers Eliezer Adar, Shlomo Erez, Dani Halotz, Ra'anana Ne'eman, Amos Shachar, Yiftach Shadmi and Gideon Yahalom. Peri was credited with four kills during the Yom Kippur War, and nine years later became the final IDF/AF pilot to achieve ace status while flying the Kurnass. He was also the last IDF/AF pilot to be credited with a kill while flying the aircraft



reconnaissance Phantom IIs used the all-aspect Python 3 for self-defence. At no time during the engagement did the RF-4s provide the MiG-21 with a single firing opportunity, yet they retained the option of turning into it to launch at an off-boresight angle.

Despite the attraction of downing a MiG-21 whenever the opportunity presented itself, reconnaissance Phantom II crews focused on bringing home the precious films, and on keeping the profile of their mission as low as possible. In this case the logical decision was made and the two Phantom IIs disengaged.

An EP pilot with No 105 Sqn, Ben-Ami Peri achieved 'acedom' flying Kurnass 238 on 11 June 1982. Two years earlier he had been commanding a Skyhawk squadron when he was diagnosed with cancer. Battling the disease for a number of years, he finally passed away on 17 January 1988

Racing back home to the waiting A-4 buddy-tankers, and already escorted by F-15s, the reconnaissance crews were sure the MiG-21 was already doomed, as it had exhausted its precious fuel during the engagement. An intelligence report confirmed that it had crashed in the desert due to fuel starvation, its pilot ejecting. A classic 'no



weapon' case. Sheffer and Naveh became the only RF-4E MiG killers in IDF/AF history.

LEBANON WAR

The highlight of Kurnass operations during the June 1982 Lebanon War came with the destruction of the Syrian ADF network in the Lebanon Valley. Operation *Artzav* (Insect) 19 was activated at 1400 hrs on 9 June. Within hours, the three Syrian ADF SAM brigades were neutralised, 15 batteries having been destroyed and the remaining four damaged. As in the Yom Kippur War, the ADF defeat triggered intensive aerial activity. Large numbers of Syrian fighters were vectored to the Lebanon Valley to support the ADF network, only to meet a superior force of Israeli F-15s and F-16s. The resulting air combats magnified the level of the Israeli victory as the technology gap between IDF/AF F-15s and F-16s and SAF MiG-21s and MiG-23s was clearly huge.

The Kurnass crews also showed that they had taken the lessons of the Yom Kippur War to heart by making air power the dominant factor over the battlefield. The successful campaign against enemy air defences enabled F-15 and F-16 pilots to gain considerable air-to-air successes, but only one F-4 crew managed to achieve a kill. It came on the last day of the war, and represented the first Kurnass kill for No 105 Sqn. It was also the last for the IDF/AF's Kurnass force and the fifth for Ben-Ami Peri, making him the final IDF/AF ace on the type.

Friday 11 June 1982 was officially the war's final day, although the conflict drifted until the Israelis moved back into the southern



Safely inside its hardened shelter, No 201 Sqn Kurnass 649 displays a single kill marking



The No 119 Sqn air-to-air kill scoreboard shows 25.5 victories achieved with the Kurnass between November 1972 and January 1982, together one scored by a Gloster Meteor in 1956 and 66 with the Mirage III between 1966 and 1970



In the summer of 1989, 20 years after the first F-4 Kurnass had arrived in Israel on 5 September 1969, the survivors of the first conversion course gathered at Hatzor to repeat their 1969 group photograph at St Louis (see page 7). Gaps were left for those crews who had been killed, the line up including (from left to right) a space for Ehud Henken (killed in action on 7 October 1973), Yitzak Peer (retired with the rank of lieutenant colonel in 1984), Rami Harpaz (retired as a colonel), Yoram Agmon (retired as a brigadier general in 1983), Menachem Eini (retired from IDF/AF service as a brigadier general) in 1983), a space for Shmuel Hetz (killed in action on 18 July 1970), Avihu Ben-Nun (IDF/AF CO 1987-92), a space for Shaul Levi (killed in action on 7 October 1973), Yair David and Achikar Eyal (retired as a lieutenant colonel in 1977). In the background is the first Kurnass to arrive in Israel (then numbered 01, later 601 and finally 101), which replaces F-4E 68-0417 (became Kurnass 622 and later 122) in the original photograph

Lebanon 'security zone' in 1984. There they remained until May 2000, when the IDF retreated back to the Israeli border.

Eighteen years earlier, on 11 June 1982, Ben-Ami Peri, then a No 105 Sqn EP pilot, with navigator David Oakman, was leading a Kurnass pair on a CAP mission. As usual, they were trailing a pair of F-15s when, against all the odds, the Kurnass crews visually acquired enemy aircraft not once but twice. At first it was Oakman who identified two MiG-21s at low altitude. Peri notified GCI and the F-15s, but when the MiG-21s sighted the Israeli interceptors they split up and escaped. The F-15s followed a MiG-21 and Peri chased the other MiG-21. They all missed.

When the CAP was resumed, it all happened again, but this time it was Peri who was the first to see a lone MiG-21. It broke hard to evade the F-15s, only to present the Kurnass with an ideal target. A Python 3 launched from a range of 1500 m turned the MiG into a fireball and no ejection was observed.

KURNASS TRIBUTE

That engagement ended the air-to-air combat career of the Kurnass. The force was credited with 116.5 kills between November 1969 and June 1982, broken down into 40 kills attributed to No 201 Sqn, 32 to No 107 Sqn, 25.5 to No 119 Sqn, 18 to No 69 Sqn and one to No 105 Sqn. That so many kills were credited to Kurnass crews flying defensively in what was essentially a fighter-bomber speaks volumes on the ability of the men that manned the F-4 in IDF/AF service.

Not that many Kurnass crews became aces. Indeed, only five pilots (Shlomo Egozy, Moshe Melnik, Amir Nachumi, Eitan Peled and Ben-Ami Peri) and three navigators (Itzhak Amitay, Roy Manoff and Yossi Yavin) achieved this accolade. Yiftach Spector added four kills to the eight he had previously scored as a Mirage III pilot, while Yoram Agmon became an ace while flying the Kurnass, having claimed four kills to add to the two he had achieved with the Mirage III. Only one other ace claimed victories while flying the Kurnass – Asher Snir added 1.5 kills to his tally of 12 scored as a Mirage III pilot.

APPENDICES

APPENDIX 1

KURNASS ACES

Pilot/navigator	Squadron/s	1969-73	YKW	1973-82	Plus	Total
Roy Manoff	107	-	7	-	-	7
Eitan Peled	201	2	4	-	-	6
Shlomo Egozy	107	1	7	-	-	8
Amir Nachumi	107	-	6	-	7 kills with F-16	13
Moshe Meirik	119	1	4.5	-	3 kills with F-15	8.5
Itzhak Amitay	201	1	4	-	-	5
Ben-Ami Peri	201, 105	-	4	1	-	5
Yiftach Spector	107	2	2	-	8 kills with Mirage III	12
Yoram Agmon	89	-	4	-	2 kills with Mirage III	6
Asher Snir	119	-	1.5	-	12 kills with Mirage III	13.5
Yossi Yavin	107	1	5	-	-	6

APPENDIX 2

KURNASS KILLS

Date	Squadron/s	Aircrew and Aircraft	Kill	Weapon	Remarks
11 Nov 1969	201/69	Henkin and Eyal in 608	1 EAF MiG-21	AIM-9B	Attrition War
6 Feb 1970	89	Sella and Ben-Shoa in 126	1 EAF MiG-21	Cannon	Attrition War
6 Mar 1970	201	Peer and ? in 610	1 EAF MiG-21	Cannon	Attrition War
25 Apr 1970	201	Hetz and Eini	1 EAF Il-28	AIM-7	Attrition War, night
25 Jun 1970	201	Peled and Goldwasser	1 SAF MiG-21	AIM-9D	Syrian border skirmish
30 Jul 1970	89	Ben-Nun and Levi in 105	1 Soviet MiG-21	AIM-7	Attrition War, ambush
30 Jul 1970	89	Sella and Reshef in 183	1 Soviet MiG-21	AIM-9D	Attrition War, ambush
13 Jun 1972	201	Peled and Romem in 633	1 EAF MiG-21	AIM-9D	CAP reconnaissance
13 Jun 1972	201	Bensaya and Levi-Ari 673	1 EAF MiG-21	AIM-9D	CAP reconnaissance
9 Sep 1972	89	Ben-Nun and Edan in 183	1 SAF Su-7	AIM-9D	Syrian border skirmish
21 Nov 1972	201	Gurion and Golan in 643	1 SAF MiG-21	Cannon	Syrian border skirmish
21 Nov 1972	201	Barnea and Baran	1 SAF MiG-21	AIM-9D	Syrian border skirmish
21 Nov 1972	119	Ben-Rom and Katz A	1 SAF MiG-21	AIM-9D	Syrian border skirmish
8 Jan 1973	119	Ben-Rom and Ilani	1 SAF MiG-21	AIM-9D	Syrian border skirmish
8 Jan 1973	119	Droni and Peri in 147	1 SAF MiG-21	AIM-9D	Syrian border skirmish
8 Jan 1973	119	Droni and Peri in 147	1 SAF MiG-21	No weapon	Syrian border skirmish
8 Jan 1973	119	Kanor and Tal	1 SAF MiG-21	AIM-9D	Syrian border skirmish
12 Feb 1973	201	Gurion and Amitay in 640	1 EAF MiG-21	No weapon	CAP reconnaissance
13 Sep 1973	107	Spector and Oren in 184	1 SAF MiG-21	AIM-9D	CAP reconnaissance
13 Sep 1973	107	Spector and Oren in 184	1 SAF MiG-21	AIM-9D	CAP reconnaissance
13 Sep 1973	107	Egozy and Yavin in 175	1 SAF MiG-21	Cannon	CAP reconnaissance
13 Sep 1973	119	Afek and Katz C in 144	1 SAF MiG-21	AIM-9D	CAP recon CSAR follow-up
13 Sep 1973	119	Koren R and Rozen	1 SAF MiG-21	AIM-7	CAP recon CSAR follow-up
13 Sep 1973	89	Arad and Levi	1 SAF MiG-21	AIM-9D	CAP recon CSAR follow-up
13 Sep 1973	119	Meirik and Barkan in 125	1 SAF MiG-21	AIM-9D	CAP recon CSAR follow-up
6 Oct 1973	107	Nachumi and Yavin	1 EAF MiG-17	AIM-9D	ORA Ophir
6 Oct 1973	107	Nachumi and Yavin	1 EAF MiG-17	AIM-9D	ORA Ophir
6 Oct 1973	107	Nachumi and Yavin	1 EAF MiG-17	AIM-9D	ORA Ophir
6 Oct 1973	107	Nachumi and Yavin	1 EAF MiG-17	AIM-9D	ORA Ophir
6 Oct 1973	107	Shaki and Reggev	1 EAF MiG-17	-	ORA Ophir
6 Oct 1973	107	Shaki and Reggev	1 EAF MiG-17	-	ORA Ophir
6 Oct 1973	107	Shaki and Reggev	1 EAF MiG-21	-	ORA Ophir
6 Oct 1973	119	Meirik and Tal in 141	1 EAF AS-5	AIM-7	ORA Refidim

Date	Sqn	Aircrew	Kill	Weapon	Remarks
6 Oct 1973	119	Melnik and Tal in 141	1 EAF Su-7	AIM-9D	QRA Refidim
6 Oct 1973	107	Egozy and Manoff in 151	1 EAF Mi-8	cannon	Ras Sudar sector
6 Oct 1973	107	Egozy and Manoff in 151	1 EAF Mi-8	cannon	Ras Sudar sector
6 Oct 1973	107	Egozy and Manoff in 151	1 EAF Mi-8	cannon	Ras Sudar sector
6 Oct 1973	107	Egozy and Manoff in 151	1 EAF Mi-8	cannon and slipstream	Ras Sudar sector
6 Oct 1973	107	Egozy and Manoff in 151	1 EAF Mi-8	cannon	Ras Sudar sector
6 Oct 1973	107	Goren and Ye'ari	1 EAF Mi-8	cannon	Tasa sector
6 Oct 1973	107	Yoffe and Fereq	1 EAF Mi-8	cannon	Ras Sudar sector
8 Oct 1973	201	Koren M and Lazar	1 EAF Mi-8	cannon	Tasa sector
6 Oct 1973	201	Ophir and Lif	1 EAF Mi-8	cannon	Tasa sector
6 Oct 1973	201	Peled and Ashael in 671	1 EAF Mi-8	cannon	Tasa sector
6 Oct 1973	201	Peled and Ashael in 671	1 EAF Mi-8	cannon	Tasa sector
6 Oct 1973	201	Peri and Amitay in 609	1 EAF Mi-8	cannon	Tasa sector
6 Oct 1973	201	Peri and Amitay in 609	1 EAF Mi-8	cannon	Tasa sector
6 Oct 1973	201	Peri and Amitay in 609	1 EAF Mi-8	cannon	Tasa sector
7 Oct 1973	69	Feldsho and Gur	1 EAF MG-21	-	ABA Giandis
7 Oct 1973	69	Amizi and Israeli	1 EAF MG-21	AIM-9D	ABA Giandis
7 Oct 1973	119	Lapidot and Katz C	1 EAF MG-21	cannon	ABA Mansura
7 Oct 1973	119	Koren R and Barzov	1 EAF MG-21	AIM-9D	ABA Mansura
7 Oct 1973	69	Raz and Shachar	1 SAF MG-21	cannon	FLOT, Mt Hermon
8 Oct 1973	107	Spector and Manoff in 172	1 SAF MG-21	cannon	ABA Saikal
8 Oct 1973	201	Ben-Eliyahu and Barak	1 EAF MG-17	cannon	FLOT, Suez Canal
8 Oct 1973	201	Holdai and Cohen	1 EAF MG-17	cannon	FLOT, Suez Canal
8 Oct 1973	201	Holdai and Cohen	1 EAF MG-17	cannon	FLOT, Suez Canal
8 Oct 1973	201	Squadron kill	1 EAF MG-17	no weapon	FLOT, Suez Canal, Zohar and Kiryati
9 Oct 1973	119	Afek and Zeevi in 142	1 SAF MG-21	AIM-7	T-4, night
10 Oct 1973	69	Arad and Edean	1 SAF MG-17	AAM	FLOT, Golan Heights
10 Oct 1973	69	Squadron kill	1 SAF MG-21	no weapon	ABA Damascus IAP, Gat and Kessler
10 Oct 1973	107	Maimon and Poleg in 122	1 SAF MG-21	AIM-9D	ABA Blai
10 Oct 1973	107	Squadron kill	1 SAF MG-21	no weapon	ABA Blai, Spector and Erel
10 Oct 1973	119	Squadron kill	1 SAF MG-21	no weapon	ABA Blai, Melnik and Sagi
11 Oct 1973	107	Squadron kill	1 SAF MG-21	no weapon	ABA Saikal, 7 and Raz
11 Oct 1973	201	Peled and Talmon in 620	1 EAF MG-21	cannon	ABA Tsachya
11 Oct 1973	201	Squadron kill	1 EAF MG-21	no weapon	ABA Tsachya, Peled and Talmon
11 Oct 1973	201	Squadron kill	1 EAF MG-21	no weapon	Banha, Ben Elyahu and NW
11 Oct 1973	201	Squadron kill	1 EAF MG-21	no weapon	?
12 Oct 1973	201	Regiv and Shmueli	1 SAF MG-21	AIM-9D	ABA Damascus IAP
12 Oct 1973	107	Egozy and Erel in 205	1 InAF MG-21	cannon	ABA Saikal
13 Oct 1973	107	Nachumi and Ziv	1 SAF MG-21	AIM-9D	ABA Saikal
13 Oct 1973	119	Squadron kill	1 SAF MG-21	no weapon	ABA Khukhul
13 Oct 1973	69	Agmon and Wittmann in 09	1 SAF MG-17	AIM-9D	FLOT, Golan Heights
13 Oct 1973	201	Halutz and Noi	1 EAF MG-21	AIM-9D	FLOT, Lake Bitter
13 Oct 1973	201	Regiv and Lazar	1 EAF Su-7	AIM-9D	FLOT, Lake Bitter
14 Oct 1973	107	Maimon and Raz in 101	1 EAF MG-21	AIM-9D	ABA Tanta
14 Oct 1973	107	Maimon and Raz in 101	1 EAF MG-21	cannon	ABA Tanta
14 Oct 1973	107	Egozy and Yavin in 230	1 SAF MG-17	cannon	ABA Damascus Elmaz
14 Oct 1973	107	Squadron kill	1 EAF MG-21	no weapon	ABA Tanta, Nachumi and Regiv
14 Oct 1973	107	Spector and Manoff in 122	1 EAF MG-21	AIM-9D	ABA Tanta
14 Oct 1973	119	Squadron kill	1 EAF MG-21	no weapon	ABA Tanta, Koren R and Sopher
14 Oct 1973	201	Ben-Eliyahu and Talmon	1 EAF MG-21	cannon	ABA Mansura
14 Oct 1973	201	Peled and Gal in 633	1 EAF MG-21	cannon	ABA Mansura
14 Oct 1973	201	Squadron kill	1 EAF MG-21	no weapon	ABA Mansura, Ben-Eliyahu and Talmon
15 Oct 1973	107	Squadron kill	1 EAF MG-21	no weapon	ABA Tanta, Spector and Manoff
15 Oct 1973	119	Srir and Katz A in 119	1 EAF MG-21	cannon	ABA Tanta
15 Oct 1973	201	Squadron kill	1 EAF MG-21	no weapon	ABA Tanta, Regiv and Shmueli
15 Oct 1973	201	Peri and Lazar	1 SAF MG-21	AIM-7	Strategic bombing oil storage Tartus
16 Oct 1973	69	Agmon and Wittmann in 09	1 SAF MG-21	AIM-9D	Strategic bombing tank workshop
16 Oct 1973	69	Yahalom and Rubinstein	1 SAF MG-21	cannon	Strategic bombing tank workshop
17 Oct 1973	119	Melnik and Elazar in 147	1 SAF MG-21	AIM-9D	CAP strategic bombing Syria
17 Oct 1973	119	Melnik and Elazar in 147	0.5 SAF MG-21	cannon	CAP strategic bombing Syria
17 Oct 1973	119	Srir and Katz C in 165	0.5 SAF MG-21	AIM-9D	CAP strategic bombing Syria
19 Oct 1973	69	Gat and Katz Y	1 SAF MG-17	AIM-9D	FLOT, Kuneitra
19 Oct 1973	201	Holdai and Amitay in 622	1 EAF Su-7	AIM-9D	FLOT, Doversoir bridgehead
19 Oct 1973	201	Zohar and Kiryati	1 EAF Su-7	AIM-9D	FLOT, Doversoir bridgehead
21 Oct 1973	119	Merchavi and Ilani in 147	1 SAF MG-21	AIM-9D	FLOT, Mount Hermon

Date	Sqn	Aircrew	Kill	Weapon	Remarks
21 Oct 1973	119	Guri and Binyamini in 163	1 SAF MiG-21	AIM-9D	FLOT, Mount Hermon
21 Oct 1973	201	Squadron kill	1 SAF MiG-21	no weapon	FLOT, Mount Hermon, Paied and Gal
21 Oct 1973	201	Squadron kill	1 SAF MiG-21	no weapon	FLOT, Mount Hermon, Paied and Gal
23 Oct 1973	107	'Flowerpot 1'	1 EAF MiG-21	AIM-9D	FLOT, Ismailiya
23 Oct 1973	119	Melnik and Katz C in 162	1 EAF MiG-21	AIM-9D	FLOT, Lake Bitter
23 Oct 1973	119	Sheffer and Bankir in 165	1 EAF MiG-21	AIM-9D	FLOT, Lake Bitter
23 Oct 1973	201	Halutz and Gal in 09	1 SAF MiG-21	AIM-7	Strategic oil storage Khan Ayish
23 Oct 1973	201	Halutz and Gal in 09	1 SAF MiG-21	AIM-9D	Strategic oil storage Khan Ayish
23 Oct 1973	201	Heldai and Romem	1 SAF MiG-21	AIM-9D	Strategic oil storage Khan Ayish
23 Oct 1973	201	Stavi and Shamueli	1 SAF MiG-21	AIM-9D	Strategic oil storage Khan Ayish
6 Dec 1973	69	Shadmi and Gur	1 NK MiG-21	AAM	Red Sea Gulf of Suez
6 Dec 1973	119	Sagi and Katz C	1 NK MiG-21	AAM	Red Sea Gulf of Suez
29 Apr 1974	69	Agmon and Gur	1 SAF MiG-21	AAM	Mount Hermon skirmish
29 Apr 1974	69	Raz and Baruch	1 SAF MiG-21	?	Mount Hermon skirmish
31 Dec 1980	119	Granot and Erlich	0.5 SAF MiG-21	AAM	Lebanon skirmish
3 Jan 1982	119	Squadron kill	1 IIAF AF MiG-21	No weapon	Iraq reconnaissance mission, Sheffer and Naveh in 498 and Granot and Grossman in 492
11 Jun 1982	105	Peri and Oakman in 238	1 SAF MiG-21	Python 3	Lebanon War

Key to abbreviations

AAM – air-to-air missile
 ABA – air base attack
 CAP – combat air patrol
 CSAR – combat search and rescue
 FLOT – front line of troops
 EAF – Egyptian air force
 IIAF – Iraqi Air Force
 SAF – Syrian air force
 NK – North Korean
 QRA – quick reaction alert
 YKW – Yom Kippur War

APPENDIX 3

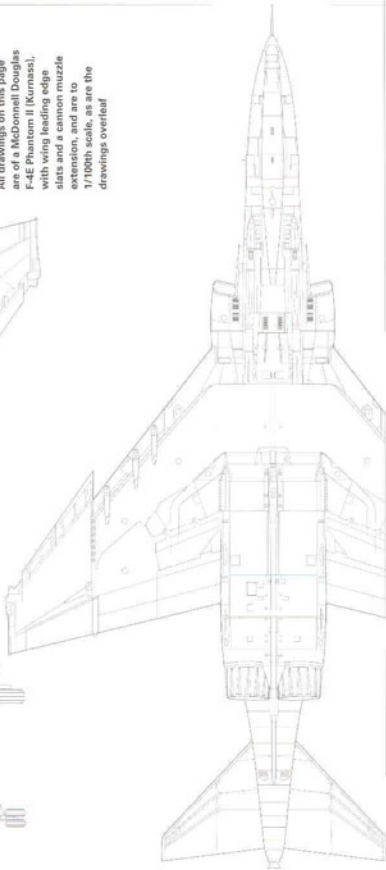
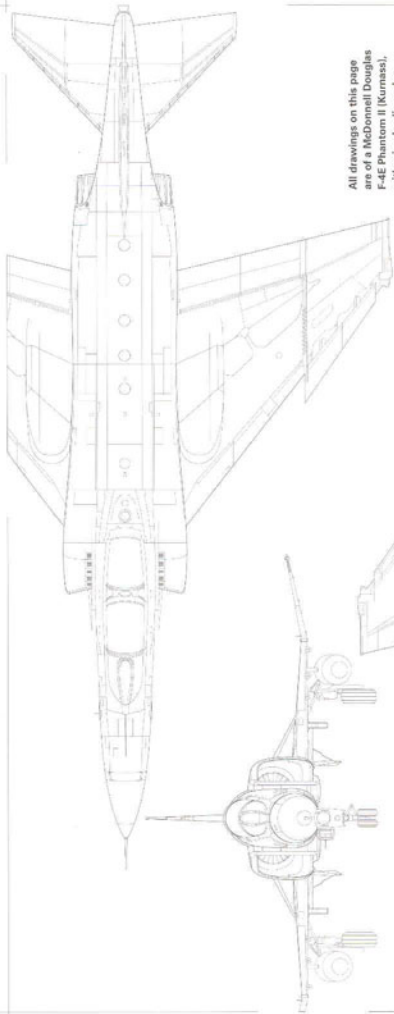
KURNASS AIR-TO-AIR EXCHANGE RATES and WEAPONS USED

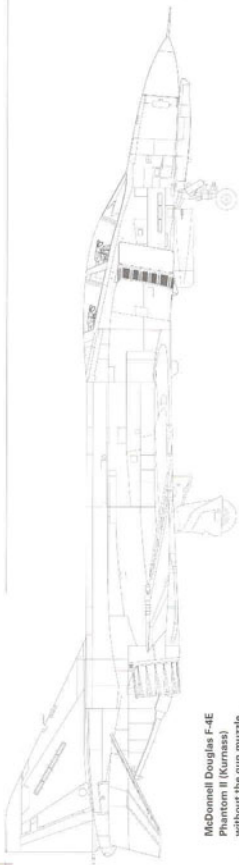
Timeframe	Kills-to-Losses ¹	Kill Weapons
November 1969 to September 1973	25-to-1	3 AIM-7, 1 AIM-9B, 15 AIM-9D, 4 cannon and 2 no weapon
Yom Kippur War	85-to-5 ²	No 69 Sqn – 10 kills (4 AAM, 3 cannon, 1 no weapon and 2 unknown) No 107 Sqn – 29 kills (10 AIM-9D, 10 cannon, 4 no weapon and 5 unknown) No 119 Sqn – 15 kills (2 AIM-7, 7.5 AIM-9D, 2.5 cannon and 3 no weapon) No 201 Sqn – 31 kills (2 AIM-7, 8 AIM-9D, 13 cannon and 8 no weapon)
December 1973 to June 1982	6.5-to-0	3.5 AAM, 1 Python 3, 1 no weapon and 1 unknown

Notes

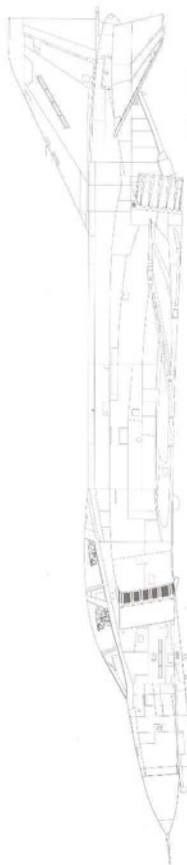
- 1 – Air combat losses
- 2 – Including a 'friendly-fire' incident loss in an air combat

All drawings on this page
are of a McDonnell Douglas
F-4E Phantom II (Kumass),
with wing leading edge
slats and a cannon muzzle
extension, and are to
1/100th scale, as are the
drawings overleaf



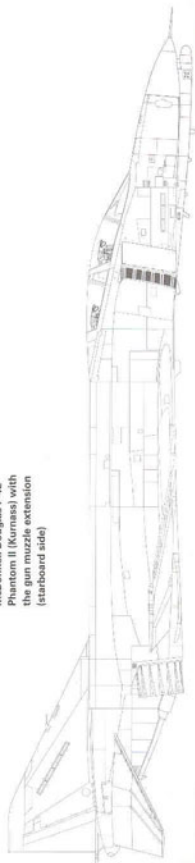


McDonnell Douglas F-4E
Phantom II (Kurnass)
without the gun muzzle
extension (starboard side)



McDonnell Douglas
F-4E Phantom II
(Kurnass) without
the gun muzzle
extension (port side)

McDonnell Douglas F-4E
Phantom II (Kurnass) with
the gun muzzle extension
(starboard side)



1

Kurnass 08 of No 201 Sqn, Hatzor, 11 November 1969

The first Kurnass air-to-air kill was credited to No 69 Sqn aircrew Ehud Henkin and Achikar Eyal flying a No 201 Sqn mission in No 201 Sqn aircraft Kurnass 08. No 201 Sqn initially marked its aircraft with two-digit tail numbers, but the prefix 6 was soon added. Similarly, No 69 Sqn's early F-4s were adorned with a two-digit tail number until the prefix 1 was added. After the Yom Kippur War the prefix of all surviving No 201 Sqn aircraft was changed to 1 to reflect their early delivery origin under the *Peace Echo 1 to Ill* projects.

2

Kurnass 04 of No 201 Sqn, Hatzor, 17 November 1969

The first Kurnass loss was a combined Nos 69 and 201 Sqn affair when the former's Ehud Henkin and Shaul Levi ejected from No 201 Sqn's D4 after suffering battle damage in an air-to-ground mission over Jordan. Kurnass 04 was one of the first four F-4Es to arrive in Israel on 5 September 1969, along with 01, 08 and 10. The first Kurnass flight in Israel was made by 04 on 7 September 1969 with No 201 Sqn CO Shmuel Hetz in the front seat and IDF/AF CO Mordechai 'Moti' Hod behind him.

3

Kurnass 610 of No 201 Sqn, Hatzor, 6 March 1970

Pilot Yitzhak Peer shot down an Egyptian MiG-21 flying 610 on 6 March 1970 to achieve both his and the jet's first kill. 610 subsequently survived the Yom Kippur War, which was no mean feat bearing in mind that the No 201 Sqn lost 14 aircraft. Peer was himself shot down by an SA-3 SAM while flying a suppression of enemy air defences (SEAD) mission in Kurnass 680 on 30 June 1970. He remained a PoW in Egypt until 16 November 1973. His navigator, Yair David, was recovered in a daring combat search and rescue (CSAR) mission performed by the crew of a Sikorsky S-65C-3 helicopter.

4

Kurnass 36 of No 69 Sqn, Ramat David, 2 April 1970

The first Kurnass air combat loss occurred on 2 April 1970 when a Syrian MiG-21 using an AA-2 AAM to shoot down No 69 Sqn Kurnass 36, flown by squadron junior deputy CO Gideon Magen and navigator Pinchas Nachmani. Both men ejected successfully and were kept as PoWs in Syria until 3 June 1973. This was Magen's third narrow escape, as he had ejected from a Vautour on 21 July 1969 following a mid-air collision, and baled out of a Meteor after suffering a birdstrike on 26 September 1960. Nachmani had flown as a Nord Noratlas navigator during the Six Day War, and was among the first group of navigators to be converted to the Kurnass in Israel in September 1969.

5

Kurnass 661 of No 201 Sqn, Hatzor, 3 August 1970

Following the loss of aircraft on SEAD missions on 30 June and 5 July 1970, US-supplied AN/ALQ-101(V)ECM pods were rushed into service, and the next big SEAD mission was

flown on 18 July 1970 with the Kurnass force using the 'pod formation' tactic – flying at medium altitude and in close formation to achieve the optimum ECM solution. 'Pod formation' proved to be a huge failure, costing the IDF/AF the Kurnass flown by No 201 Sqn CO Shmuel Hetz and navigator Menachem Eini. Hetz was killed and Eini became a PoW in Egypt until 16 November 1973. The Kurnass flown by No 69 Sqn CO Avihu Ben-Nun, with navigator Shaul Levi, was also hit by a SAM but Ben-Nun managed to land the damaged jet at Refidim. The final Kurnass loss on a SEAD mission during the War of Attrition came on 3 August 1970 when the No 201 Sqn aircraft flown by Yigal Shochat and navigator Moshe Goldwasser was shot down. Seriously injured, Shochat became a PoW in Egypt until 15 August 1970 but Goldwasser was killed. The aircraft of wingmen Ra'anana Ne'eman and navigator Yoram Romem was also damaged by a SAM, but Kurnass 661 landed safely at Refidim. The landing was especially tricky as Ne'eman had been badly wounded in the left hand, losing three fingers. Indeed, the crew only managed to get safely down by Ne'eman flying the jet from the front cockpit and Romem moving his set of throttles in the back.

6

Kurnass 673 of No 201 Sqn, Hatzor, 13 June 1972

Pilot Adi Benaya and navigator Yosef Lev-Ari shot down an Egyptian MiG-21 on 13 June 1972 in Kurnass 673. A *Peace Echo 1* F-4E Block 41 jet (ex-USAF 68-0525), 673 was lost in air combat on 11 October 1973 when an Egyptian MiG-21 shot down No 201 Sqn's 'Crab 2' with an AA-2 AAM. Pilot Yonatan Ophir and navigator Aran Cohen were declared missing in action, but following the 1979 peace treaty between Egypt and Israel, their bodies were recovered from the latter country after a massive Israeli search was conducted with comprehensive Egyptian support. Ophir's body was returned to Israel in May 1982, and he was buried in Jerusalem on 1 June, while Cohen's body was located inside the wreckage of the Kurnass in early 1995 – he was buried in his Kibbutz at Dgania on 12 June that same year.

7

Kurnass 154 of No 119 Sqn, Tel Nof, 23 June 1972

Early Kurnass force attrition was heavy, not only due to combat losses but also as a result of accidents. No 119 Sqn's 154, flown by pilot Aran Ramot and navigator Nathan Peri, collided with 128, flown by Aharon Arnon and navigator Shimon Goldstein, during a training mission. All four ejected successfully over the Mediterranean, but Arnon drowned before he could be rescued. Initially, No 119 Sqn aircraft flew without the red flash on the vertical stabiliser.

8

Kurnass 187 of No 69 Sqn, Ramat David, July 1972

The installation of leading-edge wing slats was intended to improve manoeuvrability, but they also slightly reduced the aircraft's performance in terms of acceleration and speed. No 187 – a *Peace Echo 1* F-4E Block 41 (ex-USAF 68-0544) – was modified with fixed slats in October 1970 so that the proposed innovation could be fully flight tested. It also became the only IDF/AF F-4 to have a large sharkmouth painted on its nose. Slats were introduced on F-4E Block 48

the main Karpada Kurnass operator, and 315 was still wearing its USAF scheme when it acquired a SAM kill marking in 1982.

22

Kurnass 317 of No 107 Sqn, Hatzirim, 1982

In the June 1982 Lebanon War, the IDF/AF fully implemented the lessons learned in the Yom Kippur War with the result that the advantage returned to the combat aircraft. It destroyed the Syrian ADF SAM network in the Lebanon Valley without loss on 9 June 1982, the Kurnass squadrons representing the prime instrument of this success. They relied on perfect real-time intelligence when attacking the Syrian batteries with PGMs under the shroud of electronic warfare (EW) cover. No 107 Sqn's 317 was credited with two SAM kills. Note the non-standard, forward-mounted AAM on this jet, this configuration freeing up the wing pylons for PGMs, targeting pods and drop tanks.

23

Kurnass 144 of No 119 Sqn, Tel Nof, 1984

The filming of Hollywood movie *Iron Eagle* in Israel in 1984 resulted in a number of extraordinary Kurnass schemes appearing, including No 119 Sqn's 144 displaying a red star on its tail. On 13 September 1973, Omri Afek and Chaim Katz were flying this aircraft when it shot down a Syrian MiG-21. Having survived both the Yom Kippur and Lebanon wars, 144 was not selected for upgrade to Kurnass 2000 standard and withdrawn from use. It is currently on display at Ramat David air base in No 69 Sqn colours, although most of its service career was spent with No 119 Sqn. In the twilight of its active career it also flew with No 201 Sqn.

24

Kurnass 175 of No 69 Sqn, Ramat David, 1984

No 69 Sqn was the first IDF/AF unit to introduce the Rafael Python 3 AAM into operational service in 1978. By then, however, the Kurnass' air-to-air role had dwindled from being secondary, as it was in the delta-fighters' days, to virtually negligible following the introduction of the F-15 and F-16 into IDF/AF service in 1976 and 1980, respectively. No 175 was upgraded to Kurnass 2000 standard as 575, the transformation being fairly simple as 1xx Kurnass aircraft became 5xx after their upgrade.

25

Kurnass 106 of No 119 Sqn, Tel Nof, 1985

The red flash on the vertical stabiliser distinguished No 119 Sqn aircraft from the mid-1960s, when it was first applied to the unit's Mirage IIIs. The marking disappeared for about two years after the squadron was reformed as a Kurnass unit in October 1970, but it subsequently returned. This mid-1980s attempt to break with tradition and introduce a blue flash did not last long, however. Kurnass 106 was not upgraded to Kurnass 2000 standard and ended its service career with No 107 Sqn.

26

Kurnass 304 as Kurnass 2000 prototype 001, Flight Test Centre, Tel Nof, July 1986

Ex-No 69 Sqn Kurnass 304 became the Kurnass 2000

upgrade prototype, flying for the first time as 001 on 15 July 1987 – it was delivered to the IDF/AF FTC for flight testing on 11 August 1987. The 2000 upgrade focused on replacement of the outdated analogue avionics with modern digital systems, the most important single element being the substitution of the AN/APQ-120 radar with the Norden AN/APG-76 SAR. IDF/AF requirements were so stringent that development of the Norden radar lagged behind schedule, and the first Kurnass 2000 upgrades were delivered without it. Only in 1992 did deliveries begin, enabling the full standard of the upgrade to be finally achieved. Kurnass 304/001 is currently on display at the IDF/AF Technical School in Haifa.

27

Kurnass 334 Super Phantom II, Flight Test Centre and IAI, Tel Nof and Lod, 1987

A parallel programme to the Kurnass 2000 project was the IAI Super Phantom II. In this upgrade, avionics innovations, structural improvements and systems modernisation also included the replacement of the General Electric J79 turbojets with Pratt & Whitney PW1120s – similar to the engines fitted into the still-born IAI Lavi. As the PW1120 was a totally new powerplant, the Super Phantom II project was also a test-bed for the new engine prior to its employment in the single-engined Lavi. The Super Phantom II was actually Kurnass 334 (ex-USAF 66-0327), and it was first flown with a PW1120 in place of the right-hand J79 on 30 July 1986 – several months before the Lavi's first flight on 31 December 1986.

28

Kurnass 334 Super Phantom II 4X-JPA/Paris Airshow 229, June 1987

Having successfully completed the first phase of the test programme with a J79 in the left-hand engine bay and a PW1120 in the right-hand bay, the first flight with two PW1120s came on 22 April 1987. The project carried high hopes, and Kurnass 334 was displayed at the June 1987 Paris Airshow as 4X-JPA/show number 229. IAI project test pilot Adi Benaya impressed visitors with a spirited display in the transformed Phantom II, which by then enjoyed a similar thrust-to-weight ratio as modern fighters, although its aerodynamic configuration could not compare with the F-15 and F-16. The Lavi project's termination in August 1987 effectively ended the life of the Super Phantom II as well, since the PW1120 had been specifically developed for the Lavi. The Israeli government then shifted responsibility for the Kurnass 2000 upgrade programme from the IDF/AF to IAI in compensation.

29

Kurnass 297 of the Flight Test Centre, Tel Nof, 1980s

Throughout its service career, the Kurnass force underwent numerous modifications, and quite a number of systems and weapons were added to the big fighter-bombers. Only in the mid-1970s did the IDF/AF finally realise the need for a dedicated and professional Flight Test Centre. Until then, whenever a modification was required, the relevant IDF/AF staff section planned the test pattern and a regular squadron was put in charge of the procedure. When the centre was formed, several Kurnass aircraft modified specifically for flight-testing were assigned to it. Most test airframes were

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